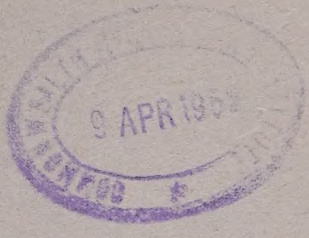
Vol. 22. No. 4. pp. 171 - 234
Abstracts 904 - 1238

April, 1952

THE VETERINARY BULLETIN

COMPILED FROM WORLD LITERATURE



Prepared by the
COMMONWEALTH BUREAU OF ANIMAL HEALTH
WEYBRIDGE, SURREY
ENGLAND

Published by the
COMMONWEALTH AGRICULTURAL BUREAUX
FARNHAM ROYAL, ENGLAND

Price 5/- net

Annual Subscription £2

Commonwealth Agricultural Bureaux

EXECUTIVE COUNCIL

J. E. CUMMINS, M.Sc., F.R.I.C. *(Chairman)*	Australia.
Dr. G. R. BATES, B.Sc., Ph.D. *(Vice-Chairman)*	Southern Rhodesia.
D. A. E. HARKNESS, C.B.E., M.A.	United Kingdom.
Lt.-Col. J. G. ROBERTSON, B.S.A., F.R.S.A.	Canada.
Dr. E. MARSDEN, C.M.G., C.B.E., M.C., F.R.S.	New Zealand.
H. R. P. A. KOTZENBERG	Union of South Africa.
H.E. THE HIGH COMMISSIONER FOR INDIA	India.
SELIMUZ ZAMAN	Pakistan.
H.E. THE HIGH COMMISSIONER FOR CEYLON	Ceylon.
J. G. HIBBERT, C.M.G., M.C.	Colonial Territories.
Sir HERBERT HOWARD, Farnham House, Farnham Royal, Nr. Slough, Bucks.	*Secretary.*

COMMONWEALTH BUREAU OF ANIMAL HEALTH, WEYBRIDGE

Director and Editor of
The Veterinary Bulletin *and of* Index Veterinarius:
W. A. POOL, M.R.C.V.S.

Assistant Director:
M. CRAWFORD, M.R.C.V.S.

Scientific Assistants:
F. A. ABBEY, B.A. (Cantab.)
E. GLASNER
E. MARSH JONES, M.Sc., A.R.I.C.
E. V. LORD
CONSTANCE M. SIMCOX, B.Sc.
F. EILEEN WILLIAMS, B.A.

Consultant Director:
Sir THOMAS DALLING, M.A., D.Sc., F.R.C.V.S., F.R.S.E.
Chief Veterinary Officer, Ministry of Agriculture and Fisheries

ABSTRACTORS CONTRIBUTING TO THIS ISSUE

UNITED KINGDOM

C. C. Bannatyne, M.R.C.V.S.
W. R. Bett, M.R.C.S., L.R.C.P.
C. J. Bradish, B.SC., PH.D.
C. Briggs, PH.D., M.R.C.V.S.
Myra L. Clarke, M.R.C.V.S.
E. Cotchin, M.R.C.V.S.
A. T. Cowie, B.SC., PH.D., M.R.C.V.S.
J. C. Cowne, B.A., F.R.G.S.
Ethel M. Cruickshank, PH.D.
G. Davies, B.SC., A.R.I.C.
Nesta Dean, M.A.
J. T. Edwards, M.R.C.V.S.
S. E. Fox, B.A.
G. Fulton Roberts, M.A., M.B., B.CH.
T. E. Gibson, B.V.SC., M.R.C.V.S.
J. H. Hale, M.B., CH.B.
F. R. Harris, B.SC., PH.D., F.R.I.C.
G. B. S. Heath, B.SC., F.R.C.V.S.
Philippa Herbert, M.A.
C. Horton Smith, B.SC., D.I.C.
J. R. Hudson, B.SC., M.R.C.V.S.
Isobel W. Jennings, M.R.C.V.S.
F. T. W. Jordan, B.SC., M.R.C.V.S.
L. P. Joyner, PH.D.
G. V. Laugier, M.R.C.V.S.
D. Luke, B.SC., M.R.C.V.S.
L. M. Markson, M.R.C.V.S.
G. P. Marshall.
Rachel Marshall, PH.D.
Anna Mayr-Harting, M.D. (Prague).
J. R. Mitchell, M.R.C.V.S.
W. J. B. Morgan, B.V.SC., M.R.C.V.S.
J. G. O'Sullivan, M.R.C.V.S.
C. W. Ottaway, PH.D., F.R.C.V.S.
W. H. Parr, PH.D.
H. Paver, B.SC., PH.D., A.R.I.C.
H. Platt, B.V.SC., M.R.C.V.S.
D. S. Rabagliati, B.SC., F.R.C.V.S. D.V.S.M.
J. H. Rose, B.SC.
J. Seamer, B.SC., M.R.C.V.S., D.V.S.M.
Kathleen J. Sinclair.
G. M. Urquhart, M.R.C.V.S.
E. G. White, B.SC., PH.D., F.R.C.V.S.
M. Woodbine, PH.D., M.SC., F.R.I.C.

AUSTRALIA

C. R. Austin, B.SC., B.V.SC.
H. McL. Gordon, B.V.SC.
J. M. Keep, B.V.SC.

HOLLAND

Dr. C. A. van Dorssen.

REPUBLIC OF IRELAND

J. A. Nicholson, M.A., PH.D., M.R.C.V.S.

ITALY

Dr. Mariangela Bertani.

SWEDEN

H. W. Boyd, M.R.C.V.S.

COMMONWEALTH BUREAU OF ANIMAL HEALTH

THE

VETERINARY BULLETIN

Vol. 22] April, 1952 [No. 4

DISEASES CAUSED BY BACTERIA AND FUNGI

CHANDLER, C. A., DAVIDSON, V. Z., LONG, P. H. & MONNIER, J. J. (1951). **Studies on resistance of staphylococci to penicillin: the production of penicillinase and its inhibition by the action of aureomycin.**—*Johns Hopk. Hosp. Bull.* **89,** 81-89. [Authors' summary slightly modified.] 904

Of the 50 pathogenic strains of staphylococci studied, 56% of the strains of *Staph. aureus* and 38% of those of *Staph. albus* were resistant to more than 1 μg. per ml. of penicillin. Of the combined total, 52% of the 50 strains were resistant to more than 1 μg. per ml. of penicillin.

Of the 25 respiratory strains [from the noses and throats of healthy carriers] studied, only 18% of those of *Staph. aureus* and 14% of those of *Staph. albus* were resistant to more than 1 μg. per ml. of penicillin. Of the combined total, 16% of the 25 strains were resistant to more than 1 μg. per ml. of penicillin. All but one of the resistant strains produced penicillinase. None of the sensitive strains produced penicillinase.

Exposure to aureomycin brought about a loss in the capacity to produce penicillinase, and this loss appeared to be irreversible.

MCLEOD, D. H. & WILSON, S. M. (1951). **Milk yield in relation to infection with** *Streptococcus agalactiae.*—*J. Dairy Res.* **18,** 235-239. [Authors' summary slightly modified.] 905

The records of milk yield and infection with *Streptococcus agalactiae* in four herds over periods of 9–13 years were analysed, using rigorous methods of control in the comparison of yields of infected and healthy cows. Fifty-seven cows which became infected in the second to sixth lactations yielded significantly more (56·5 ± 20·4 gal. per lactation) before infection than did non-infected animals in corresponding periods. In 32 animals infected in the second to fifth lactations an average apparent loss of 194·2 ± 28·3 gal. was found for the first lactation in which infection was detected. This represents a loss of about 24% of the lactation yield.

WILLIAMS, R. E. O. & HIRCH, A. (1950). **The detection of streptococci in air.**—*J. Hyg., Camb.* **48,** 504-524. [Authors' summary modified.] 906

To estimate the number of viable streptococci present in the air of occupied places, airborne bacteria were collected in a slit-sampler on a special nutrient agar medium which inhibits the great majority of the staphylococci and micrococci found in the air. On it colonies of *Str. salivarius* are readily recognized by their mucoid form. The number of other streptococci was estimated by picking and examining a random sample of the colonies.

Streptococci were recognised in the sample by three different methods which are described.

The standard errors of the mean of a number of streptococci counts in schoolrooms were calculated and found to be of the order of 14% of the mean when the authors' standard routine was followed; increasing the size of the sample of colonies picked for examination by 30% would probably have had only a trivial effect on the standard error of the mean, since the greater part of the variation was due to differences between the counts in different rooms.

SHEDLOVSKY, T. & ELLIOTT, S. D. (1951). **An electrophoretic study of a streptococcal proteinase and its precursor.**—*J. exp. Med.* **94,** 363-372. [Authors' summary copied *verbatim.*] 907

An electrophoretic study of crystalline preparations of a streptococcal proteinase and

NOTE.—*The* V.B. *references given in square brackets now refer to abstract numbers and not to page numbers.*

its precursor established their isoelectric points at pH values of 8·42 and 7·35 respectively (ionic strength 0·10).

Preparations of the proteinase appeared to be electrophoretically homogeneous over a pH range of 5 to 8·5. Precursor preparations contained a relatively low concentration of the active enzyme visible as a separate peak in electrophoretic patterns of sufficiently concentrated solutions.

Autocatalytic conversion of precursor to active enzyme was complete and resulted in a corresponding change in the electrophoretic pattern.

Treatment of precursor preparations with trypsin produced incomplete conversion to the active enzyme and resulted in the formation of a modified precursor protein. This differed from the parent substance in electrophoretic mobility and in susceptibility to trypsin, but resembled it in immunological specificity and, as previously shown, in susceptibility to conversion to active enzyme by autocatalysis.

Serological reactions of precursor and active enzyme components withdrawn from the cell after electrophoresis are described. It appears that the precursor protein may have two antigenic groups, one specific, the other shared by the active enzyme which behaves as a single antigen.

MINCK, R. & MINCK, A. (1949). Sur les profondes perturbations morphologiques et cytologiques que subit le bacille du charbon sous l'effet de la pénicilline. **[The biological changes of *Bacillus anthracis* under the influence of penicillin.]**—*C.R. Acad. Sci., Paris.* **228,** 279-281. **908**

The changes effected by the influence of penicillin on *B. anthacis* are similar to those effected on staphylococcus and *Bact. coli.* Large bodies with giant nuclei are produced; these break up into smaller forms, and from these microcolonies filaments of the normal morphology grow out.—A. MAYR-HARTING.

HONEKER. (1951). Die Ziegentuberkulose. **[TB. in goats.]**—*Berl. Münch. tierärztl. Wschr.* No. 2. pp. 29-33; No. 3. pp. 55-58. **909**

This useful review includes a discussion of incidence, clinical symptoms, pathogenesis and pathology, diagnosis and differential diagnosis. The disease is less common in herds not in contact with cattle. Skin sensitivity of tuberculous goats is high. Lung lesions are common, udder lesions are rare, and the genital organs are very seldom affected.—E. G. WHITE.

ADCOCK, J., HALEY, R. R. & DAVEY, W. N. (1951). **The Middlebrook hemagglutination test for tuberculosis. An evaluation in normal subjects and in patients with tuberculosis.**—*J. Lab. clin. Med.* **38,** 736-741. [Authors' summary modified.] **910**

The hemagglutination test for tuberculosis was applied to the sera obtained from a group of 256 normal young adults and 66 patients with moderately or far-advanced active pulmonary tuberculosis. Positive reactions in dilutions of serum of 1 : 8 or greater were found in 44 of the normal adults, and in 36 of the patients with tuberculosis.

It is doubtful that the test, as it now stands, is of any value as a diagnostic procedure or as an index of activity of disease. Human type "O" red cells are as satisfactory as sheep cells in the performance of the test.

SPANEDDA, A. (1951). Ricerche sui micobatteri. I. Mycobatteri nelle acque luride sanatoriali a cagliari. **[Recovery of mycobacteria from sewage.]**—*G. Batt. Immun.* **43,** 325-334. [English, French and German summaries.] **911**

M. tuberculosis was not demonstrated by g. pig tests and cultural examination of sewage from several sanatoria. Several other mycobacteria were isolated and for some, P.A.S. was a growth factor.—G. V. LAUGIER.

SIEBENMANN, C. O. (1951). **Effect of B.C.G. vaccination and chemotherapy on experimental tuberculosis in mice.**—*J. Immunol.* **67,** 137-149. **912**

In tests of the value of B.C.G. vaccine and of the chemotherapeutic value of streptomycin + *p*-aminosalicylic acid in mice intravenously infected with *Mycobacterium tuberculosis* counts of acid-fast bacilli in lung, liver and spleen tissues were markedly reduced in the treated animals compared with untreated infected controls.—G. V. LAUGIER.

SWEDBORG, B., DAHLSTRÖM, G. & LUFT, R. (1951). **The effect of adrenocorticotrophic hormone (ACTH) on experimental tuberculosis in mice. Preliminary report.**—*Acta endocrinol.* **6,** 215-220. [In English.] **913**

Treatment of tuberculous mice with A.C.T.H. in varied doses and in conjunction with streptomycin produced no greatly significant results.—JOHN SEAMER.

LEMAISTRE, C. & TOMPSETT, R. (1951). **The evolution of tuberculous lesions in the guinea pig during administration of adrenocorticotropic hormone (ACTH) or cortisone.**—

Amer. Rev. Tuberc. **64,** 295-306. [French and Spanish summaries.] 914

G. pigs injected regularly with large doses of either substance had less extensive lesions than controls after 14 days, but there was little difference in treated and untreated animals after 28 days.—W. H. Parr.

Wagener, K. & Mitscherlich, E. (1951). Fortschritte in der kulturellen Differenzierung der Tuberkelbakterientypen. **[Culture-differentiation of tubercle bacilli.]**—*Zbl. Bakt. I (Orig.)* **157,** 87-94. Discussion pp. 94-96. 915

The avian type can be differentiated from the bovine and human types by culture on Dubos' medium or on Solaktin-agar. The human type can be differentiated from the bovine type on Herrmann's glycerin medium or on brom-cresolpurple medium.

—W. R. Bett.

Francis, J. (1951). **Some observations on infection of the bovine udder with *Mycobacterium tuberculosis* and *Corynebacterium pyogenes*.**—*J. comp. Path.* **61,** 161-167. [Author's summary copied *verbatim*.] 916

A small herd was divided into groups of four cows each and pooled samples of milk from each group were examined on eight occasions. Two guinea-pigs were each injected intraperitoneally with 10 ml. from every sample of milk, i.e., approximately 1·25 ml. of milk from each quarter was examined on each occasion. Two guinea-pigs developed very slight tuberculosis.

Five guinea-pigs inoculated with the milk died and showed lesions from which pure cultures of *C. pyogenes* were isolated. An abscess containing *C. pyogenes* was found in one other guinea-pig. All but one of the infected guinea-pigs were injected with milk from group 2 and one cow in this group subsequently developed a typical infection of *C. pyogenes* in the udder. *C. pyogenes* was isolated from the udder of a cow in another herd that developed no obvious disease.

It is suggested that both tubercle bacilli and *C. pyogenes* may occasionally pass from the blood stream into the milk. They may then be eliminated, or give rise to subclinical or clinical infections.

Dorofeev, K. A. & Kalachev, L. A. (1949). **[Johne's disease in sheep and wild animals.]**—*Veterinariya, Moscow.* **26,** No. 11. pp. 21-24. 917

An account of the results of complement-fixation and skin tests for Johne's disease in sheep. Both tests were considered to be reliable.

The disease was observed also in an Indian and hybrid zebu (zebu × a bovine animal of Ukraine breed), an antelope and a red deer.—F.A.A.

Downham, K. D. (1951). **Johne's disease: a preliminary note upon the prevention and control of the disease.**—*Brit. vet. J.* **107,** 309-311. 918

Instances are given of the value of improved hygiene, nutrition and management in the control of Johne's disease in herds and in promoting recovery of clinically affected animals. A badly reared calf under three months old developed symptoms and lesions of Johne's disease after a dose of infective material less than that which was resisted by well reared calves of the same age.

—E. G. White.

Sikes, D., Johnson, H. W. & Oglesby, W. T. (1951). **A comparative study of the intradermal johnin test on cattle artificially and naturally sensitized with Mycobacterium paratuberculosis.**—*Amer. J. vet. Res.* **12,** 302-305. [Authors' summary slightly modified.] 919

It is shown that the sensitivity of cattle artificially sensitized with *M. johnei* is greater than that of naturally sensitized cattle when repeated intradermal injections are made in the same site at one-, two-, three-, and four-week intervals. These data suggest that a partial local desensitization does take place when repeated injections of intradermal johnin are made in the same site.

From these data, it seems that cattle affected with Johne's disease will react to intradermal johnin in a previously unused site, even though they fail to react when repeated tests are made in the same site and that a lapse of time longer than four weeks is necessary before retesting a herd of cattle for Johne's disease, if the same testing site is to be used each time.

Bozeman, F. M., Doetsch, R. N. & Faber, J. E., Jr. (1951). **Some physiological properties of nonpathogenic mycobacteria.**—*J. infect. Dis.* **89,** 185-189. [Authors' summary copied *verbatim*.] 920

The physiological reactions of a collection of saprophytic, acid-fast organisms were studied in an endeavour to further characterize them. The organisms of the genus *Mycobacterium* included in this study were able to obtain their carbon and energy supply from some carbohydrates, polyhydric alcohols, and salts of organic acids when these compounds were present in a synthetic medium and constituted the sole source of carbon. Utilization was indi-

cated by growth and change in pH. Utilization of the carbon compounds by a number of the organisms is of sufficiently varied nature to be of value as a means of differentiating some of the species.

Dispersed growth of the organisms was obtained by adding Tween 80 to the medium. Turbidimetric measurements demonstrated that glycerol afforded the best carbon source for growth in most cases. There was an inverse relationship in the amount of growth and pH observed.

The addition of vitamins or liver extract to the medium did not provide any pronounced effect on the amount of growth.

MARTIN, G. (1951). El mal rojo del cerdo como enfermedad secundaria y su tratamiento con penicilina. **[Swine erysipelas as a secondary infection and its treatment with penicillin.]**—*Arch. vet. pract.* **1,** No. 1. Mal 1-3. **921**

A note on the cure of swine erysipelas in 14 pigs with penicillin.—G. P. MARSHALL.

KIRKOR, S. (1951). Wpływ jadu pszczelego na zakażenia różycowe, oraz na włoskowiec różycy in vitro. **[Action of bee venom on *Erysipelothrix rhusiopathiae in vitro*.]**—*Med. weteryn.* **7,** 383-388. **922**

Bee venom inhibited growth of *Erysipelothrix rhusiopathiae* on solid culture media. In concentration of 100 bee units per sq. cm. of medium, venom is bactericidal; in lower concentrations it is bacteriostatic. Inconclusive results were obtained in two cases of accidental laboratory infection of human beings treated immediately with bee venom.—J. R. MITCHELL.

GOLDIE, W. & COLLINS, D. H. (1951). **Experimental *Erysipelothrix* arthritis in rabbits.**—*J. Path. Bact.* **63,** 551-552. **923**

Rabbits were given a series of small intravenous injections of *E. rhusiopathiae*. Arthritis, mainly of the carpus and shoulder joints developed in 6–23 days and was of the proliferative type with heavy lymphocyte and monocyte infiltration; this was the only constant pathogenic effect.—W. J. B. MORGAN.

HRUŠKA, K. (1950). Experimentální příspěvek k července vepřů. **[A glucoside vaccine against *Erysipelothrix rhusiopathiae* infection.]**—*Čas. československ. Vet.* **5,** 607-609. [French summary.] **924**

H. recommended a vaccine consisting of 3–5 ml. of a broth culture of an attenuated strain with digitonin or saponin added to cause a depot of the antigen in the tissues, together with 3 ml. of antiserum.—A. MAYR-HARTING.

GOCHENOUR, R. B. & YOTTER, E. S. (1952). **The stability of *Erysipelothrix rhusiopathiae* vaccine (desiccated).**—*Vet. Med.* **47,** 27 & 30. [Authors' summary modified.] **925**

E. rhusiopathiae culture vaccine in liquid form is known to be a relatively unstable biological product which loses the viability and virulence essential to potency at a relatively early date after production. In the studies reported, vaccine prepared by desiccation from the frozen state was found to retain its original viability and virulence for at least two years and, further, to remain stable in the restored state for at least seven days when kept at 40°F.

BOYER, C. I., JR., SIPPEL, W. L. & CARLISLE, B. E. (1951). **Listeriosis of cattle in South Georgia.**—*Vet. Med.* **46,** 482-484 & 493. **926**

A note on listeriasis in cattle, said to be the first report of the disease in the State of South Georgia.

V. D. SCHAAF, A., DE JONG, J. J. & DE JONG, J. M. (1951). Listeria monocytogenes als mogelijke verwekker van een hersenaandoening bij het rund. **[*Erysipelothrix* (*Listeria*) *monocytogenes* as the cause of brain disease in cattle.]**—*Tijdschr. Diergeneesk.* **76,** 751-756. [English summary.] **927**

An account of the demonstration of *E. monocytogenes* as the cause of brain disease in a heifer.—C. A. VAN DORSSEN.

OLSON, C., JR., COOK, R. H. & BAGDONAS, V. (1951). **An attempt to immunize sheep during an outbreak of listeriosis.**—*Amer. J. vet. Res.* **12,** 306-313. [Authors' summary modified.] **928**

An attempt was made to immunize sheep during the course of an outbreak of listeriasis by giving approximately half the flock of 540 sheep two subcutaneous injections of living *Erysipelothrix* (*Listeria*) *monocytogenes* culture. Only 1 case occurred in the vaccinated sheep during one week following the first dose of culture vaccine. After the second dose of culture vaccine, more sheep developed the disease among the vaccinated group than among the non-vaccinated control group.

The existence of asymptomatic cases was suggested in some sheep with temporary elevations of body temperature and leucocytosis of neutrophils. Whole blood from a sheep which had recovered from a mild infection in the early part of the outbreak and given to 3 affected sheep appeared to provide protection. Another sheep which had had a number of previous exposures to living *E. monocytogenes* provided serum which failed to prevent death in three

of four sick sheep. Penicillin seemed to prolong life in two cases of the natural disease but they died.

It is suggested that some etiological factor exists in addition to *E. monocytogenes* in the natural disease of sheep.

CARTER, G. R. (1951). **Studies on a *Pasteurella multocida* chicken embryo vaccine. II. Type-specific nature of immunity elicited by a monovalent *Pasteurella multocida* vaccine.**—*Amer. J. vet. Res.* **12,** 326-328. [Author's summary copied *verbatim.*] 929

Mice immunized with chicken embryo vaccines prepared from types A, B, and C of *Past. multocida* demonstrated a strong resistance to homologous challenges, but displayed only a low degree of immunity to heterologous challenges.

ROSHER, A. B. (1947). ***Haemophilus influenzae* and its relation to epidemic influenza.**—*Proc. R. Soc. Med.* **40,** 749-760. 930

R. described the morphological and cultural characteristics of strains of *H. influenzae* and discussed their pathogenicity in relation to epidemic influenza. Pleomorphism occurs when the bacillus is growing under suboptimal conditions, owing to an insufficient supply of the V factor. Bizarre forms are also seen when penicillin comes into contact with the organism. Epidemic influenza may be due to a complex of virus plus *H. influenzae*. Attention was drawn to the value of the giant colony method for differentiating closely allied organisms, and to the importance of the indole reaction and bile solubility test.—W. R. BETT.

DAVIS, B. D. (1951). **Inhibition of *Escherichia coli* by *p*-aminobenzoic acid and its reversal by *p*-hydroxybenzoic acid.**—*J. exp. Med.* **94,** 243-254. [Author's summary copied *verbatim.*] 931

p-Aminobenzoic acid (PABA) exerts three metabolic effects on *E. coli*: it acts as a normal vitamin at low concentrations, as a source of another vitamin, *p*-hydroxybenzoic acid (POB), at moderate concentrations, and as a growth inhibitor at high concentrations (150 to 1600 μg./ml.). The inhibition is competitively reversed by POB in 1/100 the concentration of PABA. The inhibition is also reversed to a limited extent by shikimic acid [3, 4, 5-trihydroxycyclohexene-1-carboxylic acid] and compound X, precursors of POB.

p-Nitrobenzoic acid is an inhibitory competitor of both POB and PABA.

The retardation of growth produced by PABA and other competitive analogues of POB (*p*-nitrobenzoic acid; 4, 4'-dihydroxydiphenyl sulfone; phenosulfazole) is converted to complete bacteriostasis by the addition of L-aspartic acid in a remarkably low concentration (1 μg./ml.), without change in the competitive ratio with POB. The mechanism underlying this synergism is not clear.

In contrast to wild type, mutants that require POB not only are inhibited by much lower concentrations of the above analogues, but also show inhibition by weaker competitors of POB such as *p*-hydroxybenzenesulfonamide, *p*-chlorobenzoic acid, and *p*-fluorobenzoic acid.

MORRIS, C. S. & EDWARDS, M. A. (1950). **Further investigations on the presence in raw milk of a bactericidal substance specific for certain strains of coliform organisms.**—*J. Dairy Res.* **17,** 253-260. 932

The bactericidal substance described by the authors is not specific for a particular organism; it is active at 29–45°C. but destroyed at 55°C., and is present in whey and in bovine, sheep and pig serum.—MALCOLM WOODBINE.

JOHNSON, S. D., BRUNER, D. W. & MURPHY, J. W. (1951). **Infection of the bovine udder with paracolon bacteria.**—*Cornell Vet.* **41,** 283-288. [Abst. from authors' summary.] 933

An organism identified as belonging to the paracolon group of enteric bacteria, and closely related to the Ballerup subgroup, was isolated from the milk of 44 quarters of 17 cows in a mastitis infected herd at least once, and as many as 12 times, when the herd was critically examined during an eight-month period.

The outbreak was characterized by recurrent attacks of mild mastitis of short duration. The amount of permanent damage to the udders, as determined by palpation, was small.

TSION, R. A. (1949). [**Salmonella infection in calves.**]—*Veterinariya, Moscow.* **26,** No. 11. pp. 12-16. 934

The article refers to an immunity of 18–20 days in about half the animals treated—stated to be produced by some method of vaccination widely practised in the U.S.S.R.—and to the need to produce a more durable result. Mention is made of a system of vaccination involving four separate treatments which was stated to yield good results.—F.A.A.

RITCHIE, J. M. & CLAYTON, N. M. (1951). **An investigation into the incidence of *Salm. dublin* in healthy cattle.**—*Mon. Bull. Minist. Hlth publ. Hlth Lab. Serv.* **10,** 272-277. [Authors' summary modified.] 935

Samples of faeces and bile and liver swabs from healthy cattle of Irish and non-Irish origin

were examined for organisms of the *Salmonella* group. Except for *S. typhi-murium* on one occasion, *S. dublin* was the only type isolated. From 1st November, 1949, until 31st December, 1950, *S. dublin* was isolated from 10% of samples of faeces and 3·4% of samples of bile from the Irish cattle examined; the corresponding figures for non-Irish cattle were 3·7% and 0·5%. Of 202 liver swabs from Irish cattle examined, 25 yielded *S. dublin*; of 171 liver swabs from non-Irish cattle, none was positive.

Out of 762 milk samples examined, one deposit from bulked milk produced in Gt. Britain yielded a culture of *S. dublin*.

Young Irish cattle on the whole showed a fairly steady infection rate, but in older animals culled from dairy herds in Gt. Britain there was a tendency for most batches of animals to be completely clear, and for an occasional batch to give an abnormally high rate.

JEBB, W. H. H., DOUGLAS, S. H. & TAYLOR, J. (1951). **A new salmonella type, *Salmonella oxford*, isolated from a guinea-pig.**—*Mon. Bull. Minist. Hlth publ. Hlth lab. Serv.* **10**, 200-201. [Authors' summary modified.] **936**

A new salmonella type has been isolated from a g. pig with enteritis. This organism has the antigenic structure III, X:a-1, 7 but does not contain the "plus" factor described by Hormaeche *et al* [*V.B.* **15**, 465]. The proposed name is *S. Oxford*. A culture has been deposited with the National Collection of Type Cultures and is No. 8461.

SCHNEIDER, M. D. (1951). **Pathogenicity of *Salmonella typhimurium* administered subcutaneously to mice in mixture with each polynucleotide complex from *Salmonella typhimurium*, *Salmonella typhosa*, and *Salmonella newport*.**—*Amer. J. vet. Res.* **12**, 340-344. [Author's summary slightly modified.] **937**

"Purified" polynucleotide complex preparations from *Salmonella* types contained desoxypentosenucleic acid contaminated with ribonucleic acid.

Purified polynucleotide complex from *Salmonella typhi-murium* was found to possess a property contributing to invasiveness of the homologous culture in mouse typhoid infections experimentally induced in mice. Purified polynucleotide complex from antigenically related *Salmonella typhi* and antigenically unrelated *Salmonella newport*, under the conditions of these experiments, also enhanced the pathogenicity of mouse typhoid organisms injected subcutaneously into mice.

Three possible mechanisms of action of virulence enhancement of *S. typhi-murium* bacilli injected subcutaneously into mice in mixture with bacterial polynucleotide complex from *S. typhi-murium*, *S. typhi* and *S. newport* were discussed.

JOSLAND, S. W. (1951). **Survival of *Salmonella typhi murium* on various substances under natural conditions.**—*Aust. vet. J.* **27**, 264-266. [Author's summary slightly modified.] **938**

The survival periods for a New Zealand strain of *S. typhi-murium* of bovine origin were determined on various substances under natural conditions. *S. typhi-murium* remained viable in water, pasture and faeces for periods ranging from 4 to 28 weeks. These lengthy survival periods demonstrate the potential danger of clinically affected and carrier animals; support is therefore given to the desirability of the application of control precautions such as the isolation from the herd of infected and carrier animals until such time as their faeces are consistently salmonella free.

RETTGER, L. F. (1947). **Pullorum disease: some recent advances in the tube agglutination test.**—*Proc. 19th Ann. N.E. Conf. Lab. Wkrs Pullorum Dis. Contr., June 11th, 12th & 13th.* pp. 32-33. [Mimeographed.] **939**

R. used a more dilute antigen than is usually employed and found that it gave improved results. In reading the test he includes an "imperfect negative". He suggested that birds which yield "imperfect negative" reactions to the tube test may be disposed of without retest or P.M. examination and without condemning the flock.—F. W. JORDAN.

BODIN, S. (1951). Några synpunkter på antigenets betydelse vid den serologiska diagnosen av hönstyfus. **[Importance of the antigen used in the serological diagnosis of pullorum disease.]**—*Nord. Vet.-Med.* **3**, 477-502. [In Swedish. English and German summaries.] **940**

In the preparation of antigen the composition of the suspension fluid and the method of killing the antigen are of importance. The bacterial concentration in the antigen used in Sweden (0·1 vol.%) is considered by B. to be too high and to conceal partial agglutination. A concentration of 0·05 vol.% is too low. A concentration of 0·075 vol.% is satisfactory. In Sweden the occurrence of variant types of *S. pullorum* is so infrequent as not to constitute a practical diagnostic problem. B. emphasized the importance of internationally regulated standards.—H. BOYD.

GWATKIN, R. & DZENIS, L. (1951). **Fowl typhoid. II. Agglutination reactions in an artificially infected flock of chickens.**—*Canad. J. comp. Med.* **15,** 214-218. [Authors' summary modified.] 941

A group of 48 birds, half of which were infected by the intravenous route and half orally, were tested with gallinarum and pullorum antigens over a period of six months. Under the conditions of this experiment, the whole blood test with Connaught and regular form pullorum antigens detected all the reactions shown with gallinarum antigen and a number which it did not detect. The tube test with regular pullorum antigen detected about 95 per cent of the gallinarum reactions. Variant form antigen detected only 60 per cent of these reactions.

These birds apparently threw off the infection early as ten contact birds placed in the group half-way through the experiment remained negative. This was further indicated by the decline in agglutination titres, which was very marked in the group infected by mouth.

One of the intravenous group died of fowl typhoid on the 27th day after infection and the organism was recovered from the eight organs examined. Fifteen birds died between that time and the end of the experiment and none yielded *S. gallinarum* on culture. The surviving 42 were killed at the conclusion of the experiment and the organism was isolated from three females.

S. gallinarum could not be detected in any of 400 eggs examined.

BRUNER, D. W. (1951). *Salmonella kingston*: **a new type.**—*Cornell. Vet.* **41,** 339-340. [Author's summary copied *verbatim.*] 942

Salmonella kingston (I, IV, XXVII, XII: gst-) was recovered on postmortem examination from the livers of 14-day-old poults in which it apparently produced a mortality of approximately 2%.

HESS, W. R. & ROEPKE, M. H. (1951). **A non-specific brucella agglutinating substance in bovine serum.**—*Proc. Soc. exp. Biol. Med.* **77,** 469-472. [Authors' summary slightly modified.] 943

A filter paper chromatographic technique was used to demonstrate the presence in animal sera of a non-specific agglutinative material for *Brucella*. As judged by the physico-chemical properties of the material it does not seem to be related to agglutinins which arise from a specific antigenic stimulus of the classical type.

ROSSI, P. & BRUYÈRE, A. (1950). Brucellose bovine et antibiothérapie. **[Treatment of bovine brucellosis with antibiotics.]**—*Bull. Acad. vét. Fr.* **23,** 443-449. 944

The authors state that dosage with an antibiotic, of which no details are given and which is named mycoin C_3, reduced the abortion rate in a brucella infected herd to 25%.

—NESTA DEAN.

WASHKO, F. V., BAY, W. W., DONHAM, C. R. & HUTCHINGS, L. M. (1951). **Studies on the pathogenicity of** *Brucella abortus* for swine.—*Amer. J. vet. Res.* **12,** 320-323. [Authors' summary slightly modified.] 945

Infectivity trials using *Br. abortus*-infected cow's milk fed to susceptible pigs indicated that, under these conditions, *Br. abortus* was not highly pathogenic for swine but that some infections were experimentally induced.

Br. suis isolations reported here from pigs fed *Br. abortus*-infected cow's milk raise questions which can not be answered satisfactorily at this time.

These and other experiments previously reported [*V.B.* **20,** 3228], using *Br. suis* as exposure material for cattle, indicate the need for further research on the inter-species transmissibility of brucella organisms.

MORSE, E. V., ERLING, H. G. & BEACH, B. A. (1951). **The bacteriological aspects of experimental brucellosis in dogs following oral exposure. II. Effects of feeding Brucella infected milk to young dogs.**—*Amer. J. vet. Res.* **12,** 324-325. [Authors' summary slightly modified.] 946

Fourteen young dogs were continuously fed, *ad libitum*, milk which contained *Br. abortus* strain 2308 and brucella agglutinins. Animals from the group were killed and autopsies performed at 43, 62, 69, 91, 99, 105, and 112 days, respectively. During the course of the investigations, demonstrable serum agglutinins for brucella were not detected. Attempts to isolate brucella from excreta and tissues failed.

KILLOUGH, J. H., MAGILL, G. B. & SMITH, R. C. (1951). **Terramycin, chloramphenicol and aureomycin in acute brucellosis. A preliminary report.**—*J. Amer. med. Ass.* **145,** 553-556. [Abst. from authors' summary.] 947

Thirty-nine patients acutely ill with brucellosis were treated, 16 with terramycin hydrochloride, 12 with chloramphenicol and 11 with aureomycin.

Clinical response was excellent with each

antibiotic and from this viewpoint there was no observed advantage of any one drug. Aureomycin frequently caused gastric disturbances. There were no significant differences in the clinical or bacterial relapse rates with the three compounds. The combined clinical-relapse rate was 69% and this emphasized that a satisfactory curative routine of administration with the available agents has not been found.

GAY, K. & DAMON, S. R. (1951). **A yolk sac technique for the routine isolation of *Brucella*. Injection of clotted blood specimens into embryonating eggs with recovery of all three species.**—*Publ. Hlth Rep., Wash.* **66,** 1204-1211. **948**

Blood clot specimens were injected directly into the yolk sac of embryonated eggs, subcultures being made at four-day intervals. Fourteen strains of brucella (including *Br. abortus, Br. suis* and *Br. melitensis*) were recovered from a total of 96 blood samples. Duplicate experiments with g. pigs and crystal violet tryptose broth yielded positive cultures from one and from six samples, respectively.

—COLIN C. BANNATYNE.

BRAUDE, A. I. (1951). **Studies in the pathology and pathogenesis of experimental brucellosis. I. A comparison of the pathogenicity of *Brucella abortus, Brucella melitensis,* and *Brucella suis* for guinea pigs. II. The formation of the hepatic granuloma and its evolution.**—*J. infect. Dis.* 89, 76-86 & 87-94. [Author's summaries slightly modified.] **949**

I. A comparison has been made of the pathogenicity of the three species of brucella for g. pigs. In g. pigs inoculated with *Br. suis* there was formation of abscesses in almost every animal. The tendency for formation of abscesses was much less striking after inoculation of *Br. melitensis,* but the animals manifested a more severe illness than those infected with *Br. suis.* It was found that *Br. abortus* produced only slight destruction of tissues.

II. The basic granuloma, which is common to infections by all three species of brucella, has been traced in its development from small aggregates of cells in the sinusoids of the liver. The significance of the granuloma as a mechanism of defense and the functions of the individual component cells have been considered. The development of the granuloma did not depend on the existence of hypersensitivity in experimental brucellosis. Comparisons have been made between the properties of the granuloma of experimental brucellosis and the tubercle of experimental tuberculosis.

REINHARD, K. R. (1951). **A clinical pathological study of experimental leptospirosis of calves.**—*Amer. J. vet. Res.* **12,** 282-291. [Author's summary slightly modified.] **950**

Six calves were inoculated with leptospira organisms obtained from natural bovine cases and cultural, haematological and clinical studies were made on these animals. The following were features of the disease: (a) A fever, which started as early as the fourth and as late as the ninth day, and which lasted 2–4 days. (b) Leptospiraemia, which was detectable in some cases before the febrile period and which ended in all cases soon after the end of the fever. (c) In two cases, leptospiruria accompanied by albuminuria occurred after the fever, in one as long as six weeks, and leptospira were isolated from the kidneys of both animals P.M. (d) Neutropenia and lymphopenia occurred during or close to the time of fever. (e) A transitory anaemia generally occurred. In three cases, haemoglobinuria occurred in association with erythrocyte decrease. Associated with the progress of anaemia in two cases was a great increase in red cell fragility. (f) In all cases, there were gross and microscopic lesions of focal interstitial nephritis.

NEGHME, A., CHRISTEN, R., JARPA, A. & AGOSÍN, M. (1951). Estudios sobre inmunobiologia de la enfermedades parasitarias. II. Susceptibilidad de cepas puras de ratones a la leptospirosis experimental. **[Immunobiology of parasitic diseases. II. Susceptibility of pure strains of mice to experimental leptospirosis.]**—*Bol. Inform. parasit. Chilenas.* **6,** 4-5. [Abst. from English summary.] **951**

The authors have inoculated thirteen pure strains of mice (*Mus musculus*) and one of *Peromyscus maniculatus gambelli,* with several strains of pathogenic leptospira isolated from rats trapped in the municipal abattoir of Santiago. They concluded that genetic constitution is an important factor in susceptibility to experimental leptospirosis. Thus, both *Peromyscus maniculatus gambelli* and the C57 and C58 strains of mice were highly susceptible, while the Ay, Daab, and Dba strains of mice had a relative resistance and the remainder were highly resistant. The different grade of susceptibility was mainly expressed in the mean survival time and in the weight curve of the infected mice.

BROOM, J. C. (1951). **Leptospirosis in England and Wales.**—*Brit. med. J.* Sept. 22nd, 689-697. **952**

This is a general review of human leptospirosis, with an analysis of 465 cases of Weil's

disease in relation to age, sex, occupational, seasonal and geographical incidence. Canicola fever and Weil's disease are compared and contrasted, and suggested improvements in the early diagnosis of leptospirosis are discussed, together with the relevant methods of prevention. Penicillin did not reduce the death rate in 206 cases of Weil's disease.—Clive Briggs.

Broom, J. C. (1951). **Canicola fever in Great Britain.**—*Mon. Bull. Minist. Hlth publ. Hlth Lab. Serv.* **10,** 258-265. [Author's summary slightly modified.] 953

Between 15 and 20 human cases of canicola fever are recognized annually in Great Britain, but evidence suggests that the true incidence is probably higher. Although *Leptospira canicola* is less well adapted to the dog than is *L. icterohaemorrhagiae* to the rat, dogs probably remain carriers for years, and so continue to act as a reservoir of infection. Transmission of *L. canicola* to man is most often effected by direct contact with infected dog's urine, but it can also be brought about by bathing in contaminated water. Appropriate measures to prevent transmission of *L. canicola* from dog to man are described, and also the methods which should be used to eliminate the infection in carrier dogs. A short review is given of the symptoms, methods of diagnosis, and treatment.

Lawrence, J. J. (1951). **The growth of leptospirae in semi-solid media.**—*Aust. J. exp. Biol. med. Sci.* **29,** 195-199. [Author's summary modified.] 954

Leptospira are strict aerobes but will grow in atmospheres with a wide range of oxygen tension. At least some strains will grow in atmospheres in which oxygen content varies from 0·5% to 90%. Leptospira reduce 2, 6-dichlorophenol indophenol, which is a sensitive indicator of their growth.

The ring of enhanced growth, which is seen in cultures of leptospira in a semi-solid medium at the bottom of the zone of growth, and which sharply demarks the limit of macroscopic growth, is due to two factors. The first is that leptospira are strict aerobes and, as all the oxygen is used up in the surface zone, no growth can take place below this ring; and the second is that their metabolic products can diffuse away into the unoccupied depths of the tube. It follows that this narrow zone is particularly suited to the growth of leptospira.

Murrell, T. W., Jr. (1951). ***Microsporum audouini* isolated from a dog.**—*Arch. Derm., Chicago.* **63,** 638. [Abst. in *Bull. Hyg., Lond.* **26,** 898. (1951), copied *verbatim.*] 955

A case is reported of a dog as an unquestioned carrier of *M. audouini.* It is suggested that dogs may be sources of infection in tinea capitis due to *M. audouini* as well as in that due to *M. canis.* It may be possible that dogs acquire the disease from man and transmit it to children.

Smith, H. W. (1951). **A laboratory consideration of the treatment of *Actinobacillus lignièresi* infection.**—*Vet. Rec.* **63,** 674-675. 956

Potassium iodide was without appreciable lethal effect on *A. lignièresi in vitro;* mercuric iodide had a marked effect, but this may have been due to the mercury rather than the iodine content. *A. lignièresi* was slightly susceptible to penicillin, but was very sensitive to sulphapyridine, sulphamethazine and sulphathiazole and was moderately sensitive to sulphanilamide; the sulphonamides are therefore worthy of extensive clinical trial.—Clive Briggs.

Ohtsuki, T., Suda, Y. & Sai, M. (1950). **Studies upon the glass-mould. I. Isolation from moulded glass.**—*Misc. Rep. Res. Inst. nat. Resources, Tokyo.* **17-18,** pp.69-77. [In Japanese. English summary.] [Abst. in *Rev. appl. Mycol.* **30,** 530. (1951), copied *verbatim.*] 957

Moulds from malt agar cultures which were able to grow on optical glass under controlled conditions of extreme humidity in experiments at Ochanomizu University, Japan, included species of *Penicillium, Aspergillus, Monilia, Alternaria, Heterobotrys* [*Atichia*], *Glenospora* [? *Aleurisma*], and *Cladosporium.* Under natural conditions no spore germination occurs on glass. However, a mould which was actually cultured on glass under natural conditions is described as *Aspergillus glaucus* var. *tonophilus* n. var. [without a Latin diagnosis].

Brian, P. W. (1951). **Antibiotics produced by fungi.**—*Bot. Rev.* **17,** 357-430. [Abst. in *Rev. appl. Mycol.* **30,** 531. (1951), slightly modified.] 958

The records of antibiotic production in each of the taxonomic groups of fungi are considered in turn, account being taken of negative results as well as of positive indications of antibiotic production. Brief notes are given on the characters of the antibiotics, based on their more important physical, chemical and biological properties. The data indicate that of the 2,191 species of 245 genera tested, 785 species in 120 genera are active. At present fungi are known to produce about 96 apparently distinct antibiotics; many obtained in the crude form only are possibly identical with others. Only 57 have been well characterized, and of these 48

have been obtained from Fungi Imperfecti, eight from Basidiomycetes, and one from Ascomycetes. Much more attention has been paid by workers to the Moniliales and Agaricales than to any other groups, and in these two orders 51 and 36%, respectively, of the species examined have shown activity. Phycomycetes have not been closely studied, and the Sphaeropsidales and Melanconiales have been almost completely neglected. Most of the antibiotics isolated have been tested against only a limited number of bacteria of purely medical importance. In general, antibiotics show no chemical unity as a class, but nearly all are lipoid-soluble and only sparingly water-soluble; many are acidic.

A bibliography of 276 titles is appended.

HORWOOD, M. P., HORTON, J. P. & MINCH, V. A. (1951). **Factors influencing bactericidal action of ultrasonic waves.**—*J. Amer. Wat. Wks. Ass.* **43**, 153-160. [Abst. from authors' summary.] **959**

Quantitative studies were made on the lethal effects of ultrasonic energy at 400 kc on aqueous suspensions of *Bacterium coli*. The younger cultures (24 hours) were more resistant than the older ones (168–192 hours). The germicidal rate of ultrasonic treatment was independent of the initial concentration, within the limits tested—six thousand to six million organisms per ml. At 98°F., complete sterility was obtained after treatment for 60 min. and at 140°F., sterilization appeared to be instantaneous.

PREUNER, R. (1951). Untersuchungen über den Bakterienkern. **[Studies on bacterial nuclei.]** —*Arch. Hyg., Berl.* **134**, 281-294. [Abst. from English summary.] **960**

In vegetative forms the nuclei become visible after treatment with HCl-fuchsine. In resting spores the results were not comparable because of the nature of the spore wall. During the prevegetative development of the spore, there is a stage during which no nucleus is demonstrable. Robinow's assumption that the peripheral nucleus of the resting spore migrates into the centre of the prevegetatively changed spore, was not confirmed. In young vegetative forms, the nuclei could be definitely proved after hydrolysis, even without nuclear reaction or staining. In older vegetative forms, this was possible without any preliminary treatment.

See also absts. **1021** and **1022** (bacteriophage); **1031** and **1034** immunology of TB.); **1131** (surface tension and bacterial activity); **1198** (*V. fetus* infection); **1221** (inhibition of bacterial growth by adsorbed anionic detergents); **1222** (formation of staphylococcal toxin); **1232** (report, U.S.A.).

DISEASES CAUSED BY PROTOZOAN PARASITES

RENJIFO-SALCEDO, S., GROOT, H. & URIBE-PIEDRAHITA, C. (1949). Contribucion al estudio de trypanosomas humanos y de animales en Colombia. [*Trypanosoma* **infections of man and animals in Colombia.**]—*Rev. Hig. Bogotà.* **24**, 3-95 **961**

The authors gave an account of trypanosomiasis in Colombia: *T. cruzi* in human beings, armadillos and the invertebrate hosts, an unidentified species resembling *T. rangeli* in human beings and the invertebrate hosts, *T. lewisi* in rats and other trypanosomes in monkeys, bats and birds.

Arthropods harbouring trypanosomes were also discussed. *Rhodnius prolixus* was host to a parasite resembling *T. rangeli*, and organisms resembling *T. vivax* were found in *Tabanus* species.—I. W. JENNINGS.

DEANE, M. P. (1947). Ocorrência do *Trypanosoma conorrhini* em "barbeiros" e em rato na cidade de Belém, Pará, e seu cultivo em meio de NNN. **[The occurrence of** *T. conorhini* **in** *Triatoma* **and in rats in the city of Belém, Pará, and its culture in NNN medium.]**—*Rev. Serv. esp. Saúde públ.* **1**, 433-448. [English summary.] [Abst. in *Rev. appl. Ent.* Ser. B. **39**, 111. (1951), copied *verbatim.*] **962**

Several examples of *Triatoma rubrofasciata* (Deg.) taken in houses in Belém, Pará, and a rat (*Rattus rattus alexandrinus*) taken in the ceiling of one of them proved to be infected by *Trypanosoma conorhini*. In view of this, care should be taken in the identification of trypanosomes found in Triatomines and wild and domestic mammals in surveys for *T.* (*Schizotrypanum*) *cruzi*.

HOPPE, J. O. & CHAPMAN, C. W. (1947). **Rôle of glucose in acute parasitemic death of the rat infected with** *Trypanosoma equiperdum*. —*J. Parasit.* **33**, 509-516. **963**

The authors concluded that rats infected with *T. equiperdum* died from a fatal hypoglycaemia due to blood sugar consumption by the parasites.—GEORGE M. URQUHART.

VON BRAND, T. (1951). **The gaseous exchanges of trypanosome-infected rats.**—*Exp. Parasit.* **1**, 60-65. [Author's summary slightly modified.] **964**

The rate of oxygen consumption of rats

infected with *Trypanosoma equiperdum* and *T. evansi* is significantly increased over the pre-infection level only during the last 36 hours preceding death. A slight increase in internal temperature is insufficient to explain this increase; it is in part due to the oxygen consumption of the parasites. The increase is too little to allow the assumption that the parasites asphyxiate their hosts.

The respiratory quotient of fed infected rats was higher than that of fasting infected rats even in the terminal stages of the disease. The implications of this finding on the sugar consumption theory of trypanosome injury are discussed, and it is concluded that it does not favor such a theory.

VON BRAND, T., TOBIE, E. J. & MEHLMAN, B. (1951). **The failure of cortisone and ACTH to influence gluconeogenesis during trypanosomiasis of the fasting rat.**—*Amer. J. Hyg.* **54,** 76-81. [Authors' summary copied *verbatim.*] **965**

Neither cortisone nor ACTH has a detectable influence on trypanosomes in vitro nor do they change the rate of development of the parasites in vivo, or the survival of infected rats. Gluconeogenesis as demonstrable in starving rats under the influence of cortisone is impaired on the third day of infection and completely lacking on the fourth day. It is obvious that a metabolic disturbance of the rats, and not an increased sugar consumption of the parasites, is responsible.

JOYNER, L. P. & MILLAR, P. G. (1952). **The transmission of *Trichomonas foetus* during the collection of semen from infected bulls.**—*Vet. Rec.* **64,** 1-4. [Authors' summary copied *verbatim.*] **966**

During the collection of semen from trichomonas-infected bulls the parasites were recovered both from the semen and from the lining sleeves of the artificial vaginas. It was shown that the parasites remained alive in semen under the normal conditions of storage at low temperatures (4° to 8°C.) for periods of at least two days.

The artificial vaginas harboured active trichomonads for periods up to five hours and it was found easy to transmit the infection from one bull to another through the medium of the artificial vagina. Observations on the progress of three such experimental infections are recorded. Attention is drawn to the inadequacy of the microscopical examination of preputial washings for the detection of scanty trichomonas infections in bulls. Cultural methods which are described give more reliable results.

GIACOMINI, G. (1950). Note pratiche di terapia nella trichomoniasi bovina. [**Therapy of bovine trichomoniasis.**]—*Zooprofilassi.* **5,** 187-191. **967**

A clinical note on the use of two proprietary iodine preparations for the treatment of trichomoniasis in cattle.—M. BERTANI.

SWITZER, W. P. (1951). **Atrophic rhinitis and trichomonads.**—*Vet. Med.* **46,** 478-481. [Author's conclusions slightly modified.] **968**

The nasal cavities of 70 out of 87 Iowa swine affected with atrophic rhinitis harboured trichomonads, whereas only two out of 72 diseased Iowa swine not affected with atrophic rhinitis were positive. The caecal contents of 75 out of 109 pigs contained *Trichomonas suis.*

Bacteria-free and yeast-free cultures of the nasal trichomonad and of *Tr. suis* were successfully propagated in C.P.L.M. [cysteine, peptone, liver infusion and maltose] medium. After continued cultivation the morphology of the nasal trichomonad and *Tr. suis* became similar. A culture of the nasal trichomonad failed to produce atrophic rhinitis when inoculated intranasally in four 36-hour-old pigs.

Tr. suis and the nasal trichomonad can establish themselves in the vagina of cows where they elicit a mild catarrhal vaginitis. Additional investigations should be conducted to determine the pathogenic potentialities of *Tr. suis* and of the nasal trichomonad.

JOHNSON, J. E., MUSSELL, D. R. & DIETZLER, A. J. (1949). **The activity of 4,4' isopropylidenebis (2-isopropylphenol) on cecal coccidiosis (*Eimeria tenella*) in chickens.**—*Ann. N.Y. Acad. Sci.* **52,** 518-532. [Abst. from authors' summary.] **969**

K.6606 or isopropylidene-bis (2 isopropyl phenol) has been found to be the most effective of a group of alkylidenediphenols which have anti-coccidial properties.

Food containing 0·3% K.6606 was given to chickens artificially infected on five successive days with 20,000 sporulated *E. tenella* oocysts. Mortality was reduced and the efficiency of food utilization was maintained. Chickens which had received this drug during an initial infection with *E. tenella* were shown to be immune to subsequent challenge infections. When the administration of the drug was delayed after infection its protective effects were seriously reduced.

There was no evidence of accumulation of the drug in the organs of the birds, although appreciable concentrations were detected in the bile.

Drug concentrations of 0·2% and 0·3%

K.6606 in the food had no apparent effect on the chickens, although 0·5% and 1·0% retarded their growth. Similarly 0·01% and 0·05% in the food of rats did not restrict their growth, but some retarding effect was apparent in male rats fed 0·25%.—L. P. Joyner.

Waletzky, E., Hughes, C. O. & Brandt, M. C. (1949). **The anticoccidial activity of nitrophenide.**—*Ann. N.Y. Acad. Sci.* **52,** 543-557. 970

Nitrophenide (m m′ dinitrodiphenyl disulphide) is a new type of anti-coccidial drug, which is effective in the control of caecal coccidiosis caused by *Eimeria tenella* and intestinal coccidiosis caused by *E. necatrix* in chickens. It is calculated that nitrophenide is ten times as active as sulphaquinoxaline.

0·05% nitrophenide in the diet completely prevented mortality in 10-day old chicks infected with *E. tenella*. The administration of the drug was commenced one or two days before inoculation and continued until eight days after. With more severe infections a slightly higher concentration of the drug was required for complete protection.

Toxic effects were observed when birds were given 0·16%, 0·107% and 0·07% nitrophenide in the food for three weeks, but deaths occurred only when 0·16% was given. Recovery was rapid as soon as normal food was restored. A concentration of 0·04% had no ill effects upon viability, weight gains or subsequent reproduction.

In field trials dosages ranging from 0·0125–0·04% produced marked anti-coccidial effects.

It is concluded from the results of toxicity tests in mammals and estimations of tissue concentrations of nitrophenide in treated chickens, that such birds are suitable for human consumption.—L. P. Joyner.

Wehr, E. E., Farr, M. M. & Gardiner, J. I. (1949). **The value of borax in the control of experimental *Eimeria tenella* infections in chickens.**—*Ann. N.Y. Acad. Sci.* **52,** 571-578. 971

Borax was administered either alone or in combination with 0·15% or 0·3% urea in the drinking water of young chickens infected with *E. tenella*. 0·3% borax reduced the mortality when administration was begun one or two days after infection and continued for three days, but haemorrhage and weight loss were not prevented. Some reduction in the weight-gain of the birds was attributed to the borax especially when the period of administration was extended.

0·5% borax prevented mortality, but the birds suffered a greater loss in weight than with the 0·3% solution.

The addition of urea did not appear to enhance the anti-coccidial properties of the borax and a loss in weight was not prevented.

—L. P. Joyner.

Brackett, S. & Bliznick, A. (1949). **The effect of small doses of drugs on oocyst production of infections with *Eimeria tenella*.**—*Ann. N.Y. Acad. Sci.* **52,** 595-610. [Abst. from authors' summary.] 972

Young chicks were lightly infected with *E. tenella* by the oral administration of 200 sporulated oocysts and certain drugs were administered continuously in the food from the time of inoculation.

0·01–0·0125% Sulphaquinoxaline had little or no effect, but higher doses resulted in reductions in oocyst output.

0·01% Nitrophenide (m m′ dinitrodiphenyl disulphide) however, caused a detectable reduction in oocyst output and with higher doses this reduction was more marked.

0·01–0·0125% Sulphaquinoxaline did not affect the sporulation of the oocysts while the same doses of nitrophenide reduced the proportion of sporulated oocysts to 40%.

The bearing of these findings on the prophylaxis of coccidiosis under field infections is discussed.—L. P. Joyner.

Garnham, P. C. C. (1951). **An attempt to find the vector of *Hepatocystis* (= *Plasmodium*) *kochi* (Levaditi and Schoen).**—*Exp. Parasit.* **1,** 94-107. [Author's summary slightly modified.] 973

The geographical range in Africa of *Pl. kochi* is briefly reviewed and the highest degree of infection was shown to be in the drier bush country rather than in tropical rain forest, though infection is present in both. The following arthropods were excluded as possible vectors on theoretical grounds: *Glossina, Simulium* (with certain provisos), ticks, mites, fleas and lice. Dissections of the salivary glands of over 2,000 mosquitos caught in a forest where infected monkeys were numerous showed no sporozoites.

In laboratory experiments, the following were examined with negative results: lice, *Culicoides,* reduviid bugs, mites, several species of mosquitos and blood-sucking nematode worms. In field experiments, the following insects showed no or very poor ookinete development after feeding on heavily infected monkeys: *Taeniorhynchus* species, *Hodgesia sanguineus, Stomoxys* and *Chrysops centurionis*. It is assumed, therefore, that these diptera are

not likely to be vectors. In the same field experiments, good ookinete development was found in many species of mosquitos including *Anopheles, Aedes, Culex* and *Eretmapodites,* also in *Phlebotomus*. Fed insects belonging to these genera and *Culicoides* were kept, usually for 10 days and were then dissected—always with negative results. *Lankesteria culicis,* nematodes and leptomonads were found in several mosquitos.

The ookinete of *Pl. kochi* is described.

DURBIN, C. G. (1951). **Attempts to transfer *Plasmodium berghei* Vincke and Lips to domesticated animals.**—*Proc. helminth. Soc., Wash.* **18,** 108-110. [Author's summary and conclusions slightly modified.] 974

A group of domestic animals, consisting of 2 lambs, 2 pigs, 1 calf, 2 puppies, 2 kittens and 5 chicks, was inoculated intravenously with blood of white rats heavily parasitized with *Pl. berghei*. The inoculated animals were observed for clinical symptoms of parasitosis with negative results. Thick and thin blood smears were made and found negative for parasites. Subinoculations were made to check for any inapparent or subpatent infections; all results were negative.

Since attempts to transfer *Pl. berghei* to the animals used in these experiments were unsuccessful, it is reasonable to conclude that the hosts listed were not susceptible to infection with this parasite.

RAO, S. B. V., DAS, J. & RAMNANI, D. R. (1951). **Fowl malaria.**—*Indian vet. J.* **28,** 99-101. [Authors' summary slightly modified.] 975

Occurrence of natural cases of *Plasmodium gallinaceum* in exotic fowls has been recorded for the first time in India at Izatnagar Poultry Farm.

MANWELL, R. D. & DROBECK, H. P. (1951). **Mammalian toxoplasmosis in birds.**—*Exp. Parasit.* **1,** 83-93. [Authors' summary modified.] 976

Naturally occurring infections with *Toxoplasma* were sought in several species of wild birds, and one case was found in a locally caught pigeon—the first known demonstration of toxoplasmosis of the mammalian type in birds in eastern North America. In a study of experimental infections with a strain of *Toxoplasma* of human origin in pigeons, song sparrows, grackles, and chickens, some of the birds became acutely ill and died within a few days or a week; others became chronically ill and had no symptoms during the period of observation which, for certain birds, lasted more than six months. There was no indication that the parasites were in any way modified by such prolonged exposure to conditions in the avian host, except where chicks were experimentally employed. In the latter case, there was a definite indication of lessened virulence after 20 serial passages.

Grackles with experimental infections had an easily demonstrable parasitaemia for at least as long as five days, during which as little as 0·1 ml. of their blood was infective to mice.

Two young pigeons, fed for two weeks by a mother with acute toxoplasmosis, failed to become infected, but proved susceptible when later inoculated with parasites. They developed a chronic infection, characterized by a rise of antibodies in much the same way as in mammals having the disease. The antibody curve remained high for the entire period of observation (six months).

Mouse brains from experimentally induced cases of toxoplasmosis remained infective for as long as 18 days when stored in an ordinary electric refrigerator and immersed in sterile Difco skim milk. Exposure to higher temperatures however showed that 55°C. for 5 min. is lethal to the parasite, and that in some cases they are no longer viable after an exposure of equal duration to 50°C.

See also abstr. **1047** (manual, parasitology); **1232** (report, U.S.A.).

DISEASES CAUSED BY VIRUSES AND RICKETTSIA

MICHELSEN, E. & JOHNSON, M. (1951). **Toxic effect of foot-and-mouth disease immune cattle sera injected subcutaneously in guinea pigs.** —*Acta path. microbiol. scand.* **28,** 226-233. [In English. Abst. from authors' summary.] 977

A toxic effect of foot-and-mouth immune cattle sera injected subcutaneously in g. pigs is described. This toxic effect is demonstrated after injection with sera from convalescent cattle and also with sera taken from recently vaccinated cattle. The toxic factor apparently does not exist in sera from susceptible cattle.

Filtering of the sera by a Seitz EK filter does not alter the toxic factor. It is possible to eliminate the factor when only the globulin fraction of a serum is given. The toxic factor is rather labile. Storing at 4°C. for 10–14 days as well as heating at 56° for 30 min. seems to inactivate the factor. Inactivation of serum at 56° is recommended if it is to be used for type differentiation.

The intoxication of g. pigs caused by injection of cattle sera taken from 5–10 days following infection may perhaps be related to the parallel intoxication in cattle following an attack of F. & M. disease.

LEVADITI, C. & VAISMAN, A. (1950). Effects virulicides de l'auréomycine sur le virus de la fièvre aphteuse. [**The effect of aureomycin on the virus of F. & M. disease.**]—*C.R. Acad. Sci., Paris.* **230,** 1221-1223. **978**

Aureomycin exerts lethal effect *in vitro,* and given subcutaneously, it prevents local infection by the dermotropic strains, but is without effect on the neurotropic strains, either *in vitro* or *in vivo.*—F. R. HARRIS.

MICHELSEN, E. (1951). Forsøg over ultrasoniske bølgers effekt på nogle virusarter samt på aluminiumhydroksyd. (Mund- og klovesyge, Newcastle disease og stomatitis vesicularis). [**Effect of ultrasonic waves on the viruses of F. & M. disease, Newcastle disease and vesicular stomatitis and on aluminium hydroxide.**]—*Nord. Vet.-Med.* **3,** 806-813. [English and German summaries. English summary modified.] **979**

A number of ultrasonic treatments have been given to foot-and-mouth disease, Newcastle disease and stomatitis vesicularis viruses. In all these experiments the frequency employed was 1000 KHz. [k.c.p.s.], and the effect was adjusted at 80 watts. For the first-mentioned virus the longest period of treatment was 180 min.; for the two other viruses, 60 min. No reduction of the infection titer could be demonstrated after the treatment and in the case of the Newcastle disease virus this treatment had caused a slight activation.

The absorption of energy appeared not to be in any way related to the purity of the preparation.

Spectrophotometrically it was investigated whether $Al(HO)_3$ treated with vibrations for 30 min. would be able to absorb a larger amount of fuchsine than an untreated control preparation. No difference in the absorption capacity of the two preparations could be demonstrated.

BHATIA, H. M. (1951). **Temperature reaction in rabies due to "fixed virus"** [in sheep.]—*Indian vet. J.* **28,** 83-87. [Author's summary modified.] **980**

Temperature records of 43 sheep infected with rabies "fixed" virus are given. Five sheep died owing to causes other than rabies. Thirty-five sheep had a typical rise in body temperature about two days before the onset of symptoms, and this rise persisted until paralysis and death. Three sheep had atypical rise in body temperature.

BOAND, A. V. & KEMPF, J. E. (1951). **The identification of influenza virus antibodies by means of the collodion particle agglutinaton reactions.**—*J. Lab. clin. Med.* **37,** 914-923. [Authors' summary modified.] **981**

A method for titrating the influenzal virus antibodies by the use of the collodion particle agglutination technique of Cavelti [*J. Immunol.* (1947), **57,** 141] is described in detail. The various factors influencing the reaction were taken into consideration as were the means by which non-specific reactions could be eliminated. A concentration of collodion particles of one-twentieth that of a McFarland No. 2 nephelometer standard, a haemagglutination titre of virus from 1:1,280 to 1:5,120, a pH of the diluent of 7·0, and NaCl concentration of 1% were necessary for specific, sensitive, and reproducible results. Formolized virus was a stable and dependable antigen for use in the test.

I & II. ISAACS, A. & EDNEY, M. (1951). **Interference between inactive and active influenza viruses in the chick embryo. V. The behaviour of different strains of challenge virus. VI. The behaviour of different strains of interfering virus.**—*Aust. J. exp. Biol. med. Sci.* **29,** 169-178 and 179-186. [Authors' summaries modified.] **982**

I. Interference between heated LEE, and active strains of four MEL and three WS variants has been studied quantitatively.

400–800 A.D. of heated LEE caused complete (greater than 99%) interference with haemagglutinin production by 100 to 1,000 ID_{50} of all the strains tested. When larger inocula of the challenge viruses were used, the strains were found to differ in their ability to "overcome" interference by the same amount of heated LEE. The extent to which strains were able to overcome interference was correlated with their enzymic activity on chorio-allantoic membrane inhibitor (inhibitor gradient position).

When different amounts of heated LEE were tested against 100 to 1,000 ID_{50} of each of the seven challenge viruses, the strains showed large differences in the amount of heated LEE required to produce a standard degree of interference. This provides evidence that complete interference cannot be accounted for by one particle of heated LEE per allantoic cell.

II. Six strains of heated influenza virus, when formolised, showed a reduction in inter-

fering power. Formolised-heated virus was found to have a lower affinity for red cells and for chorio-allantoic membrane inhibitor than heated virus of the corresponding strain.

It is suggested that interference by heated influenza virus is due to competition with active virus for intracellular chorio-allantoic membrane inhibitor.

MAGILL, T. P. (1951). **The sorption of influenza virus by chicken erythrocytes.**—*J. exp. Med.* **94,** 31-43. [Author's summary and conclusions copied *verbatim.*] **983**

Data are presented which indicate that the forces of attraction between influenza virus and chicken erythrocytes are governed by an orderly mechanism which affects a proportional distribution of virus between erythrocytes and suspending fluid. For a unit mass of erythrocytes, the ratio of combined (sorbed) virus to free (unsorbed) virus is sufficiently constant over a wide range of virus concentrations to indicate compliance with the laws of mass action, or, perhaps, with the laws of simple adsorption; however, the ratio of combined (sorbed) virus to free (unsorbed) virus appears to be a parabolic function of the total quantity of virus.

CASALS, J., OLITSKY, P. K. & ANSLOW, R. O. (1951). **A specific complement-fixation test for infection with poliomyelitis virus.**—*J. exp. Med.* **94,** 123-137. [Authors' conclusions copied *verbatim.*] **984**

A complement-fixing antigen has been developed, using as source of material CNS tissue from newborn mice infected with the newborn mouse-adapted strain of the Lansing type, MEF1 virus. With this antigen, specific reactions have been obtained with sera from mice, cotton rats, and monkeys immunized with the Lansing-type virus, and from monkeys and chimpanzees convalescent from infection with this virus.

Twenty-one of 35 human sera obtained from individuals convalescent from poliomyelitis were positive and 6 of 22 from apparently normal persons having Lansing-neutralizing antibody, while this held true for only 1 of 19 from those having no Lansing-neutralizing antibody. The fact that positive results were found in sera from patients having an infection with poliomyelitis virus of the Brunhilde type and at the same time no Lansing-neutralizing antibody brings up the possibility of the existence of a cross-reaction in complement fixation between the two types.

JUNGEBLUT, C. W. (1951). **Problems of classification of poliomyelitis virus.**—*Arch. Path.* **52,** 18-42. [Author's conclusions copied *verbatim.*] **985**

As information concerning the mechanism of infection in human and experimental poliomyelitis accumulates, it seems advisable to review critically the properties of the virus itself. A survey of the data which have been made available through a variety of different approaches suggests that the agent which causes Heine-Medin disease is more complex than has hitherto been thought. In fact, it would appear that there exists a group of poliomyelitis or poliomyelitis-like disease entities which are caused by a corresponding group of distinct yet somehow related viral agents. It may therefore be of advantage to abandon the conventional definition of a single, homogeneous poliomyelitis virus and to recognize instead a family of poliomyelitis viruses which includes strains morphologically similar, but dissimilar with respect to their antigenic structure and tissue tropism. This proposal has in its favor a number of recently discovered experimental facts that cannot be overlooked or quickly modified. Against it are the arguments of tradition, which many may not be willing to sacrifice at this time. The proposed classification scheme is therefore offered only as a working hypothesis and point of departure for further efforts to bring about eventually a comprehensive nomenclature for "poliomyelitis virus".

CASALS, J., OLITSKY, P. K. & ANSLOW, R. O. (1951). **Adaptation of a Lansing strain of poliomyelitis virus to newborn mice.**—*J. exp. Med.* **94,** 111-121. [Authors' conclusion copied *verbatim.*] **986**

By means of rapid serial passages, including 3 successive "blind" passages, the MEF1 strain, a Lansing-type poliomyelitis virus, has been adapted to newborn mice. The virus can readily be propagated in newborn mice, in which fully adapted virus induces in almost all inoculated animals the experimental disease, resulting in a much greater infectivity for the central nervous system and a uniformly short and regular incubation period.

DALLDORF, G. (1951). **The sparing effect of Coxsackie virus infection on experimental poliomyelitis.**—*J. exp. Med.* **94,** 65-71. [Author's summary copied *verbatim.*] **987**

Young mice infected with Group B Coxsackie virus were rendered markedly resistant to poliomyelitis virus given from 4 to 10 days later. A sparing effect was detectable in somewhat older mice and in young mice inoculated with poliomyelitis after shorter intervals, but in both cases few mice survived.

Interference was manifest by survival, by

prolongation of the course of poliomyelitis, and by a decreased frequency of poliomyelitis.

PAPPENHEIMER, A. M., KUNZ, L. J. & RICHARDSON, S. (1951). **Excretion of Coxsackie virus (Conn. No. 5 strain) in the urine of infected mice.**—*Proc. Soc. exp. Biol. Med.* 77, 405-407. [Authors' conclusion copied *verbatim.*] 988

Infant mice infected wth the Conn. No. 5 strain of Coxsackie virus eliminate virus in the urine. The infectious titer of urine obtained on the 2nd day after intraperitoneal inoculation is $10^{-5 \cdot 6}$. Adult mice with pancreatic disease caused by Conn. No. 5 virus may also excrete virus in the urine.

I. SOOTER, C. A., HOWITT, B. F., GORRIE, R., & COCKBURN, T. A. (1951). **Encephalitis in Midwest. IV. Western equine encephalomyelitis virus recovered from nestling wild birds in nature.**—*Proc. Soc. exp. Biol. Med.* 77, 393-394. [Authors' summary copied *verbatim.*] 989

II. MILES, V. I., HOWITT, B. F., GORRIE, R., & COCKBURN, T. A. (1951). **Encephalitis in Midwest. V. Western equine encephalomyelitis virus recovered from mites *Dermanyssus americanus* Ewing.**—*Ibid.* 395-396. [Authors' summary copied *verbatim.*] 990

I. Virus of Western equine encephalomyelitis was isolated on three occasions from circulating blood taken from nestling birds in Weld County, Colo. in June 1950.

II. Virus of Western equine encephalomyelitis was isolated from mites (*Dermanyssus americanus*) collected in Weld County, Colo. in July 1950.

KISSLING, R. E., RUBIN, H., CHAMBERLAIN, R. W. & EIDSON, M. E. (1951). **Recovery of virus of Eastern equine encephalomyelitis from blood of a purple grackle.**—*Proc. Soc. exp. Biol. Med.* 77, 398-399. [Authors' summary copied *verbatim.*] 991

The virus of eastern equine encephalomyelitis was isolated from the blood of an adult purple grackle collected in Louisiana in June 1950.

BURNS, K. F. (1951). **Antibody response of horses to Japanese equine encephalomyelitis mouse brain vaccine.**—*Amer. J. vet. Res.* 12, 106-109. [Author's summary modified.] 992

Twenty-six horses which had negative neutralization indexes to the virus of Japanese B encephalitis were vaccinated subcutaneously with a formolized vaccine prepared from mouse brain infected with the virus of Japanese equine encephalomyelitis. These horses developed neutralizing antibodies to the viruses of Japanese B encephalitis and Japanese equine encephalomyelitis following vaccination and 23 of them showed a positive neutralization index to the virus of Japanese equine encephalomyelitis.

Based upon the premise that circulating neutralizing antibody will afford protection against natural infection, this type of vaccine may offer protection against Japanese equine encephalomyelitis as it occurs naturally.

Complement - fixing antibodies for the normal mouse brain component were regularly produced and, in some instances, part of the rise appeared to be specific for the virus. Following vaccination, only 2 of the 26 horses demonstrated a significant and possibly specific increase in complement-fixing titre to the virus of Japanese B encephalitis and Japanese equine encephalomyelitis.

WAGNER, R. (1951). Beitrag sur Behandlung der Bornaschen Krankheit der Pferde. **[Treatment of Borna disease (equine encephalomyelitis).]**—*Mh. Vet.-med.* 6, 334-336. 993

Early treatment with sulphanilamide and large quantities of water by stomach tube was followed by recovery in 60 out of 106 horses affected with encephalomyelitis in the Borna district during 1950.—E. G. WHITE.

LGOVSKI, A. (1949). **[Equine infectious anaemia: its genesis, development and prevention.]**—*Veterinariya, Moscow.* 26, No. 12. pp. 17-21. 994

It had apparently been suggested that equine infectious anaemia results from "adverse ecological conditions" and that heredity plays a role. No evidence is given.—F.A.A.

NAKAMURA, J., FUKUSHO, K. & KURODA, S. (1943). **Rinderpest: Laboratory experiments on immunization of Chosen cattle by simultaneous inoculation with immune serum and rabbit virus.**—*Jap. J. vet. Sci.* 5, 474-477. [Abst. in *Biol. Abstr.* Sect. F. 25, No. 8. p. 27. (1951), slightly modified. Signed: A. G. KARLSON.] 995

A strain of rinderpest virus was adapted to rabbits and attenuated for cattle. It did not regain virulence even after 10 successive passages through cattle. A method of simultaneous vaccination in which susceptible cattle were given the rabbit strain of virus plus hyperimmune serum was tested on 33 calves and 32 bulls. A few of the animals had transitory mild reactions following the vaccination. Three of 30 animals exposed to rinderpest died of the disease. The immunity established by the

simultaneous method lasted for at least 12 months.

NAKAMURA, J. (1941). **[On the experimental infection with rinderpest virus in the rabbit. V. Multiplicaton of the virus in the body of the infected rabbit.]**—*Jap. J. vet. Sci.* **3**, 425-429. [English summary.] [Abst. in *Biol. Abstr.* Sect. F. **25**, No. 8. p. 20. (1951), slightly modified. Signed: A. G. KARLSON.] **996**

The virus content of various tissues was assayed following establishment of the disease in rabbits by intravenous inoculation. Three days after infection the lymph nodes had the highest concentration of virus. The kidneys, liver, bone marrow and brain were less infective than the blood. Histological evidence of infection was limited to the lymphatic tissues. The titre of virus and the histological changes reached their maximum in about three days. In the blood the virus was found attached mostly to leucocytes. It is not known if the virus multiplies in the blood stream or whether the infective leucocytes came from the lesions in the lymphatic system.

SAÏTO, K. (1951). Une épizootie "d'influenza" du bétail en 1949. **[An outbreak of "influenza" in cattle in Japan (Three-day fever?)]** —*Bull. Off. internat. Epiz.* **35**, 238-246. **997**

This epizootic was characterized by rapid spread, high temperature, nasal discharge, swelling of the eyelids and in some cases painful joints. In most cases the disease lasted only 2–3 days. A virus has been isolated and is under examination. [There appears to be no justification for the use of the term 'influenza' for this disease.]—D. LUKE.

STAMP, J. T. (1951). **Developmental forms of the virus of ovine enzootic abortion.**—*J. comp. Path.* **61**, 215-218. [Author's summary copied *verbatim*.] **998**

The development of the virus of ovine enzootic abortion on the chorio-allantoic membrane of the chick embryo is described. The findings suggest that this virus belongs to the psittacosis-lymphogranuloma group.

I. ALEXANDER, R. A. (1951). **Rift Valley fever in the Union.**—*J. S. Afr. vet. med. Ass.* **22**, 105-111. **999**

II. SCHULZ, K. C. A. (1951). **The pathology of Rift Valley fever or enzootic hepatitis in South Africa.**—*Ibid.* 113-120. **1000**

III. GEAR, J. H. S. (1951). **Rift Valley fever in South Africa.** [Correspondence.]—*S. Afr. med. J.* **25**, 620. **1001**

IV. MUNDEL, B. & GEAR, J. (1951). **Rift Valley Fever. I. The occurrence of human cases in Johannesburg.**—*Ibid.* 797-800. **1002**

V. JOUBERT, J. D. S., FERGUSON, A. L. & GEAR, J. (1951). **Rift Valley Fever in South Africa. II. The occurrence of human cases in the Orange Free State, the North-Western Cape Province, the Western and Southern Transvaal. A. Epidemiological and clinical findings.**—*Ibid.* 890-891. **1003**

VI. GEAR, J., DE MEILLON, B., MEASROCH, V. & DAVIS, D. H. S. (1951). **Rift Valley Fever in South Africa. II. The occurrence of human cases in the Orange Free State, the North-Western Cape Province, the Western and South Transvaal. B. Field and laboratory investigations.**—*Ibid.* 908-912. **1004**

I-VI. These six articles deal with a widespread epidemic of Rift Valley fever which started in December 1950, this being the first occasion on which the disease has been recognized in the Union of S. Africa.

Reports of heavy mortality in sheep, particularly lambs and pregnant ewes, and in cattle, were received from the western part of the Free State in December 1950. Enterotoxaemia in sheep was widespread in other areas at the time and a definite diagnosis of that disease was made from some of the material submitted from the Free State. Enterotoxaemia vaccine was issued, but reports of mortality continued to be received. At one stage a virulent form of bluetongue was suspected to be responsible for the losses, but laboratory investigation did not support this suspicion.

In April 1951 a valuable stud bull at Johannesburg died and was examined P.M. without a definite diagnosis being made. Four veterinarians and two assistants who had been present at the P.M. examination fell ill four days later with fever, headache, body pains, photophobia and other symptoms, including, in one case, delirium. The fever had a diphasic character and all the cases recovered. This occurrence aroused suspicion that either Q fever or Rift Valley Fever was concerned. The histological findings in tissues from the bull were identical with those of Rift Valley fever and biological tests (mouse inoculation and neutralization tests with known Rift Valley fever hyperimmune serum received from the Kabete Veterinary Laboratory, Kenya) confirmed the diagnosis. In the course of these investigations every officer except one at the Onderstepoort laboratory who handled the material contracted infection.

The source of the infection is not known.

Introduction of infected mosquitos by aircraft is a possibility, or an infected person may have entered the Union in the incubation stage of the disease; migration of infected game is also a possibility. The disease has since spread widely. Very heavy losses have occurred; typical reports from farms are the following: (a) of 500 lambs born alive 350 died; (b) 300 lambs and 28 adult sheep died and all the pregnant ewes aborted; (c) 800 pregnant ewes all aborted and 280 died; (d) all pregnant ewes aborted and 75 died, while of 25 cows in calf all, except one, aborted. Game on infected farms are also reported to have aborted.

The pathology is described by Schulz and differs to some extent from that described in the literature. With regard to control, mass immunization is considered to be the only practicable measure and a neurotropic attenuated strain of virus has been obtained from the Entebbe Laboratory, the immunizing value of this strain being under investigation. It is estimated that 20 million doses will be required for cattle and sheep and it is unlikely that the Onderstepoort laboratory will be able at short notice to produce this quantity.—M.C.

I. Schrire, L. (1951). **Macular changes in Rift Valley fever.**—*S. Afr. med. J.* **25,** 926-930. **1005**

II. Freed, I. (1951). **Rift Valley fever in man complicated by retinal changes and loss of vision.**—*Ibid.* 930-932. **1006**

I and II. These two papers describe seven cases of central serous retinopathy in young men occurring shortly after attacks of Rift Valley fever. One of these men was a government veterinary surgeon and two others were employed at a research station on which Rift Valley fever had occurred in the cattle. All the cases had positive complement-fixation reactions for Rift Valley fever. The findings on ophthalmoscopic examination are described. In five there were macular exudates and in one, the veterinary surgeon, retinal detachment. In all cases there was disturbance of vision in the affected eye which in four cases improved. In one it had not improved at the time of reporting and in one, that with retinal detachment, had deteriorated in spite of several operations.

It is suggested that Rift Valley fever may cause central serous retinopathy and also retinal detachment.—M.C.

Gayot, G. (1951). Peste porcine et lapin. [**Transmission of swine fever virus in rabbits.**] —*Arch. Inst. Pasteur, Alger.* **29,** 208-214. **1007**

Using 10 ml. of blood collected five days after inoculation, G. made three attempts to passage swine fever virus serially in rabbits.

In the first series virus was no longer demonstrable by inoculation of pigs after 13 passages. In the second series a pig inoculated with the third rabbit-passage had a slight thermal rise on the second and third days, but was susceptible to swine fever when challenged later. In the third series virus was demonstrated in the blood of the third-passage rabbit; but the series was not continued.

Thermal reactions lasting from about the 8th–24th hour after inoculation appeared in rabbits inoculated with blood from pigs with swine fever, but not in the one rabbit inoculated with blood from a healthy pig. Thermal reactions did not appear in second and subsequent passages except in the first series when they began in the 7th and continued to the 14th, the incubation period being shorter for each passage. These reactions appear to have been due to a bacterial infection.—J. R. Hudson.

Ochi, Y. & Miyairi, K. (1943). **Studies on the third virus disease of swine. I. The isolation of virus and its characteristics.**—*Jap. J. vet. Sci.* **5,** 305. [Abst. in *Biol. Abstr.* Sect. F. **25,** No. 8. p. 27. (1951), slightly modified. Signed: A. G. Karlson.] **1008**

An acute infection with 100% morbidity occurred among young swine. There was high fever, depression and weight loss. When the infection was complicated by *Salmonella cholerae-suis* infection death ensued. Surviving animals failed to grow well. A virus was isolated which was transmissible only to guinea pigs and rabbits [and to swine?] and in which it produced only a transitory rise in temperature.

Sigel, M. M., Girardi, A. J. & Allen, E. G. (1951). **Studies on the psittacosis-lymphogranuloma group. I. The pattern of multiplication of meningopneumonitis virus in the allantois of the chick embryo.**—*J. exp. Med.* **94,** 401-413. [Authors' summary copied *verbatim.*] **1009**

Because of the peculiar properties of the psittacosis-lymphogranuloma group of viruses, the pattern of multiplication in the allantois of the chick embryo of one of their number, meningopneumonitis virus, was studied. This was done by determination of the changes in its infectivity for mice and chick embryos.

Titration of infectivity in embryos proved to be a more sensitive procedure than titration in mice; the latter procedure however, had the advantage of greater simplicity and gave more clear-cut results. The mouse titration method was used in most of the experiments.

Following inoculation of virus into the allantois, there was a slow decrease in infectivity in the allantoic fluids followed by an increase due to appearance of new virus between 24 and 48 hours. The slope of declining infectivity in the allantoic fluids *in ovo* was similar if not identical with the slope of decreasing infectivity in allantoic fluids *in vitro* caused by thermal degradation of virus. Multiplication of the virus in allantoic membranes was characterized by the following pattern: (a) Increase in infectivity in the first few hours (exact duration of increase depended on concentration of virus in inoculum) due to adsorption of virus. (b) Decrease in infectivity up to about 20 to 24 hours. (c) Increase in infectivity due to appearance of the new generation of virus.

The growth curve of meningopneumonitis is analyzed and the pattern of growth is discussed in the light of the present concepts of viral multiplication.

Nimi, D. & Imuta, K. (1943). **Pathohistological studies on experimental fowl pest with mice.**—*Jap. J. vet. Sci.* **5,** 550-551. [Abst. in *Biol. Abstr.* Sect. F. **25,** No. 8. p. 27. (1951), copied *verbatim.* Signed: A. G. Karlson.] **1010**

The histologic changes were studied in mice infected with an original fowl pest virus in which the mortality was 30–50%, and also in mice infected wth a mouse-adapted fowl pest virus in which the mortality was 100%. The main lesions were diffuse non-suppurative encephalomyelitis, pulmonary hyperemia and focal necrosis in the liver. In addition, there was hyaline degeneration of the splenic pulp and focal necrosis of the adrenal cortex. The mice which died early in their disease had congestion of the lungs, liver and spleen, while those that survived longer showed atrophic changes. Fowls were equally susceptible to the original and to the mouse-adapted strain. The bone marrow areas of necrosis seen in fowl did not occur in mice.

Reagan, R. L. & Brueckner, A. L. (1951). **Effects of nasal instillation of virus strains of Newcastle disease virus into the cave bat (*Myotis lucifugus*).**—*Amer. J. vet. Res.* **12,** 347-348. [Authors' summary copied *verbatim.*] **1011**

The cave bat, *Myotis lucifugus,* is susceptible to the California strain 11914 of Newcastle disease virus by intranasal instillation. The California strain was carried six passages in the bat by intranasal instillation of infected bat brain suspensions. Newcastle disease virus infection could not be produced in bats by intranasal instillation of the Minnesota 1946, BAI 1; Colorado 1946, BAI 1; Kentucky 1946, BAI 1; Connecticut 1946, BAI 1; and Delaware 1946, BAI 1 strains of the virus. Three trials using intranasal instillation were made for these five strains.

Doll, E. R., Wallace, M. E. & McCollum, W. H. (1951). **Newcastle disease virus-neutralizing indexes of normal chicken serums.**—*Amer. J. vet. Res.* **12,** 345-346. [Authors' summary slightly modified.] **1012**

Determination of the lethal dose$_{50}$ neutralization indexes ($LD_{50}NI$) of 175 serums obtained from normal chickens without known history of contact with Newcastle disease virus resulted in zero values for 75·42%, 1·32 to 5·89 values for approximately 20%, and 6·76 to 14·79 for approximately 5% of the serums. The $LD_{50}NI$ was 10 or less for 174 of the serums.

Blaxland, J. D. (1951). **Newcastle disease in shags and cormorants and its significance as a factor in the spread of this disease among domestic poultry.**—*Vet. Rec.* **63,** 731-733. [Author's summary copied *verbatim.*] **1013**

The presence of anti-haemagglutinins of Newcastle disease virus is reported in the blood serum of 18 out of a total of 54 samples collected from shags, *Phalacrocorax aristotelis,* and cormorants, *Phalacrocorax carbo.* Subsequently, six strains of a virus, serologically and immunologically identical to that of Newcastle disease, were isolated from 26 emulsions prepared from the bone marrow of shags.

The significance of the presence of this virus in wild shags and cormorants, as a potential source of infection to domestic poultry, is discussed.

Hofstad, M. S. (1951). **A quantitative study of Newcastle disease virus in tissues of infected chickens.**—*Amer. J. vet. Res.* **12,** 334-339. [Author's summary slightly modified.] **1014**

A study of the concentration of Newcastle disease virus (NDV) in the tissues of chickens experimentally infected with a virulent field strain revealed the virus to be present in the blood, spleen, lung, trachea, and intestinal contents at 24 hours after inoculation. It continued to be found in some of the tissues on the seventh day, after which no virus could be isolated. The virus was most concentrated in the lung and trachea, where concentrations of 10^7 embryo lethal doses per ml. were found on the fourth day.

A comparison of the virus concentration in the blood, spleen, and lung following inoculation of four different strains of NDV indicated

that the less virulent the strain, the lower was the concentration of virus in the tissues. There were more apparent differences between the intranasal and subcutaneous routes of inoculation with the less virulent strains than with the virulent strain. There was usually a lower concentration of virus in the tissues following subcutaneous inoculation of the less virulent strains.

While antibody production was satisfactory following inoculation of the four strains studied, the virulent field strain produced the most consistently high antibody response. Following inoculation of the less virulent strains, the antibody response showed more variation and was frequently less than the response following inoculation of the more virulent strain. The infectivity-neutralizing antibody and the hemagglutination-inhibition antibody were detected by the fifth to the seventh day in the experimental chickens.

Doll, E. R., Wallace, M. E. & McCollum, W. H. (1951). **Susceptibility to Newcastle disease infection of chickens vaccinated with a killed virus vaccine.**—*Amer. J. vet. Res.* **12,** 368-371. [Authors' summary copied *verbatim.*] **1015**

Chickens were found to be susceptible to infection of the respiratory tract by the GB strain of Newcastle disease virus at periods of three to four weeks after single doses of a killed virus Newcastle disease vaccine intramuscularly and at two weeks after four consecutive doses at weekly intervals. Although a high percentage of vaccinated birds were refractory to fatal infection, every chicken exposed by intranasal inoculation, direct contact exposure, or airborne contact exposure acquired infection of the respiratory tract.

Ginsberg, H. S. (1951). **Mechanism of production of pulmonary lesions in mice by Newcastle disease virus (NDV).**—*J. exp. Med.* **94,** 191-211. [Author's summary copied *verbatim.*] **1016**

Infectious NDV particles produce extensive pulmonary consolidation in the mouse in the absence of demonstrable virus multiplication. The lesions are indistinguishable from those of influenza A virus infection. This effect of NDV was blocked by intranasal injection of RDE [receptor-destroying enzyme] or immune serum before virus inoculation, but not by immune serum injected 5 minutes or more after NDV. Influenza A virus infection did not diminish fixation of NDV in excised lungs but did interfere with the injurious action of this agent in the living mouse. The analogy between these reactions and those which take place in a progressive virus infection is pointed out, and the mechanism of production of lesions in virus pneumonias discussed.

Hoyt, H. H., Pomeroy, B. S. & Roepke, M. H. (1951). **The propagation of the causative agent of infectious sinusitis of the turkey in the chicken embryo.**—*Amer. J. vet. Res.* **12,** 329-333. [Authors' summary slightly modified.] **1017**

The causative agent of infectious sinusitis of the turkey will cause death of the chicken embryo when it is inoculated into the yolk sac at six or seven days of incubation. Chicken embryos infected with this agent develop an appreciable concentration of it in the yolk sac membrane, yolk, chorio-allantoic membranes, and the allantoic fluid.

After 15 or more serial passages of this agent, subcutaneous hemorrhages are prominent in infected embryos. Concentrations of the agent as high as $10^{9.0}$ lethal dose$_{50}$ doses per ml. are obtained in the yolk of infected embryos when harvested seventy-two hours after inoculation.

The agent survives longer in yolk than it does in allantoic fluid, and will survive in the yolk from infected embryos at least 180 days when stored at $-40°C$.

Lucas, A. M. (1951). **Occurrence of two types of intranuclear inclusions in the pancreas of turkeys, of which one suggests a virus infection.**—*Poult. Sci.* **30,** 635-644. [Author's summary modified.] **1018**

Intranuclear inclusions, suggestive of a virus infection, were found in the acinar cells of six of the 60 turkey pancreases examined. The inclusions belong to the clustered granular type, as do those of herpes simplex and B-virus. Tissue lesions, as well as cellular disturbances, were characteristic of the disease condition. It is not known whether this is a new, undescribed virus disease of turkeys, or a known disease in which this phase of the pathology has been overlooked.

A multiple homogeneous type of intranuclear inclusion, specific for the beta pancreatic islets, was found in 38 percent of the turkeys. This was identical with that described in chickens and apparently has no relationship to the acinar inclusions. These inclusions are more abundant in males than in females. There was no association between number of lymphoid areas and the presence or absence of either beta islet- or acinar inclusions.

Some quantitative information on the normal histology of the turkey pancreas was collected, particularly in respect to the num-

ber of alpha and beta islets that may be found in a cross section.

HOULIHAN, R. B. & LAWSON, G. McL. (1945). **The transmissibility of infectious myxomatosis.**—*J. infect. Dis.* **76,** 40-46. [Authors' summary modified.] **1019**

In a rabbit heavily infected intradermally with myxoma virus, the virus did not appear in the blood stream for approximately 48 hours reaching a peak of 262,000 infectious units per ml. at the time when generalized symptoms appeared. Virus did not appear in the nasal washings until 72 hours after intradermal injection. In the early stages of the disease the virus concentration in nasal washings is considerably lower than the concentration in blood. This difference is less marked in the latter stages. Neither feces, collected daily, nor urine was infectious.

In these experiments myxomatosis was not transmitted by droplet infection at any stage of the disease. Intact nasal mucosa was more resistant to the virus than was subdermal tissue. Contact exposure during the early stages of myxomatosis was not effective in spreading the disease. Either prolonged contact throughout the course of myxomatosis, or contact at a time when the general symptoms were definitely advanced, was necessary for its transmission.

I, II & III. VON MAGNUS, H. (1951). **Studies on mouse encephalomyelitis virus (TO strain). III. Spread and multiplication of TO virus in baby mice after various routes of inoculation. IV. Neutralization tests by the intraperitoneal and intracerebral routes. V. The effect of passively transferred specific immunity on TO infection in baby mice.**—*Acta path. microbiol. scand.* **28,** 234-249; **29,** 243-250 & 251-257. [In English. Absts. from author's summaries. For previous parts, see *V.B.* **21,** 1010 and 1011.] **1020**

I. The spread and multiplication of the TO strain of mouse encephalomyelitis virus was studied in one-week-old mice, using both ordinary albino mice (A-mice) and TO-free mice (L-mice).

After intracerebral inoculation the multiplication of virus was restricted to the central nervous system, no spread of virus to other tissues being demonstrated. After oral administration the intestinal tract was the site of virus multiplication. Virus progressed to the brain and later to the cords of the animals. Traces were occasionally found in blood and in liver plus spleen, but no virus was recovered from the muscles nor from the lymph nodes.

In A-mice, no multiplication of virus took place after subcutaneous inoculation of TO virus. In L-mice a significant multiplication was observed in the muscles and also later in the C.N.S. Virus seemed first to multiply in the muscles close to the site of inoculation, later in more distant parts. The superficial lymph nodes contained virus, and all other organs examined were found to contain traces, but virus did not multiply in the intestinal tract after this route of inoculation.

After intraperitoneal inoculation of L-mice, virus was found widely spread throughout the body. Some multiplication took place in the intestinal tract, but the muscles were free from virus. Virus appeared very quickly in the C.N.S. and simultaneously in the cord and brain. No spread nor multiplication of virus was seen in A-mice after intraperitoneal inoculation.

The significance of these findings is discussed.

II. Neutralization tests with TO virus gave satisfactory results when the virus-serum mixtures were inoculated intraperitoneally into infant mice from a TO-free colony. With intracerebral inoculation of TO-contaminated stock, no neutralization was demonstrable. In some experiments a prolongation of the incubation period by 3–5 days was observed.

The antibody content in serum from ordinary albino mice three and four weeks old was found to be low, the titre being 2 and 8, respectively. A number of sera from other age groups (one week to three months) of normal mice showed a titre of 32. Serum from cotton rats immunized by repeated intraperitoneal inoculations of live TO virus titred to 512.

None of the sera from any age group of uninoculated mice from a TO-free colony contained neutralizing antibodies to TO virus; such antibodies were, however, produced quickly when the animals were fed small amounts of virus.

III. By cross-transfers of the young of mouse mothers from a "normal" TO-carrier stock of mice and from a TO-free mouse colony, it was found possible to study the transmission of immunity.

Immunity transmitted through the milk was able to protect against as much as 1000 virus doses. The protection was found to vary with the duration of suckling by immune mothers and also with the time interval between inoculation of virus and the ingestion of the milk. If four days had elapsed after inoculation of virus, ingestion of immune milk had no effect on the virus infection. When immune milk was given before the inoculation of virus, the pro-

tective effect was shown to continue at least four days after the last ingestion of immune milk. The period of life for which infant mice were found able to utilize the immunizing capacity of milk from immune mothers was shown to be approximately the first 12 days after birth.

It was demonstrated that immunity is transmitted also placentally to the offspring and that this immunity continues beyond the sixth day after birth.

BARRY, G. T. & GOEBEL, W. F. (1951). **The effect of chemical and physical agents on the phage receptor of Phase II** *Shigella sonnei*.—*J. exp. Med.* **94,** 387-400. [Authors' summary copied *verbatim*.] **1021**

A study has been made of the effect of bactericidal agents on the phage adsorption properties of Phase II *Sh. sonnei*. The ability of this microorganism to adsorb T_3, T_4, and T_7 phages can be altered by treating the bacteria with chemical and physical agents.

MCLEAN, S. J. (1951). **The isolation and characteristics of bacteriophages from staphylococci of animal origin.**—*Aust. J. exp. Biol. med. Sci.* **29,** 221-231. [Author's summary slightly modified.] **1022**

Bacteriophages can be readily isolated from strains of staphylococci of animal origin by the cross-culture method and in some cases they can be detected in filtrates of young broth cultures of the lysogenic strains.

From a set of 36 strains 85 lytic combinations were detected and 43 phages were isolated and purified. Cross-resistance tests showed that many of these phages were identical, only 5 different phages being present. All the phages except that isolated from one strain belonged to the serological group A and were not sensitive to 0·25% citrate. No lysogenic strain was found which carried more than one phage. When tested on the original 36 strains the phages gave a reaction pattern which was affected by the lysogenicity of certain of the strains.

DAVOLI, R. & SIGNORINI, L. F. (1951). Anticorpi contro *Rickettsia burneti* nel siero di animali da macello in Toscana. Nota 6. [*Rickettsia burneti* **antibodies in slaughter animals in Tuscany.**]—*Ann. San. Pubbl., Rome.* **12,** 67-73. [English summary.] [Abst. from abst. in *Trop. Dis. Bull.* **48,** 800. (1951).] **1023**

In complement-fixation tests on 1,052 animals at the public abattoir in Florence during the first four months of 1950, the chief findings were as follows, in terms of positive reactions with Q fever antigens: cattle, 6·1%; sheep, 32·7%; goats, 20·4%; pigs, 0·5%; and horses, 10·0%. The percentage of positive reactions among local animals was not significantly different from that of animals coming from the province of Emilia. A considerable percentage of unweaned lambs and kids were positive, 22·4% against 40·3% for adult sheep and goats.

The titres appear to have been low in most cases; among 28 animals in which complete titration was carried out only one reacted at 1:64 and one at 1:32. Among 77 sera found positive after being inactivated at 56°C. only 18·2% reacted after inactivation at 60°C.

See also absts. **1099** (analogy between dog distemper and human tetany); **1169** (examination of milk for mastitis agent); **1171** (food poisoning); **1172** (*B. cereus* food poisoning); **1232** (report, U.S.A.).

IMMUNITY

DALLING, T. (1951). Rapport de la commission pour l'étude préalable du contrôle et de la standardisation des produits biologiques utilisés en médecine vétérinaire. [**Report of the Office International des Epizooties on standardization of biological products.**]—*Bull. Off. internat. Epiz.* **36,** 444-446. **1024**

A brief note by the President of the Committee, reporting on the standardization of biological products, giving very brief details concerning swine fever vaccine, swine fever serum, fowl plague vaccine, sheep pox vaccine, contagious agalactia, standard antigen for the agglutination test for *Salmonella pullorum* infection, mallein, standardization of the agglutination test for brucella infection in cattle, the Vallée-Schmidt-Waldmann foot and mouth disease vaccine, vaccines against rinderpest, tuberculin and also certain other matters.

MARRACK, J. R., HOCH, H. & JOHNS, R. G. S. (1951). **The valency of antibodies.**—*Brit. J. exp. Path.* **32,** 212-230. [Authors' summary copied *verbatim*.] **1025**

The composition of the compounds formed by antibodies with excess of the homologous antigens has been studied by electrophoresis. Evidence has been found of the formation of two compounds of different composition. Antibodies appear to be bivalent.

It is suggested that the formation of large complexes by antigens and antibodies depends on the formation of a framework in which a pair of antigen molecules are held together by

several links; also that non-specific attractions between antibody molecules may increase the stability and insolubility of the complexes.

Evidence has been found of the presence in solutions of γ-globulin, that contain antibodies, of some globulin that can be incorporated in soluble antigen-antibody complexes but is not carried down with precipitable antibody in the equivalence zone.

Barr, M. & Llewellyn-Jones, M. (1951). **Factors influencing the development of potential immunity and the character of the secondary response.**—*Brit. J. exp. Path.* **32**, 231-245. [Authors' summary copied *verbatim.*] **1026**

The amount of antitoxin produced following a single injection of prophylactic into guinea-pigs does not necessarily constitute a measure of the degree of potential immunity established. Whereas 1 Lf dose of diphtheria prophylactic P.T.A.P. [purified toxoid, aluminium phosphate precipitated, of constant composition] stimulated greater antitoxin production than the same dose of A.P.T. [alum-precipitated toxoid], a remarkable similarity was observed in the immunological behaviour of the guinea-pigs after a second injection of the same prophylactic. This similarity was seen in the heights of the response 10 days after the second injection, and in the rates of loss in parallel groups that received the second injection 1, 2, 3, or 6 months after the first. Potential immunity (as judged by magnitude of secondary response) increased between the first and second months after primary stimulation and appeared to be maintained thereafter up to 6 months.

When a lower dose (0·25 Lf) of P.T.A.P. was used, potential immunity increased in some but not all animals up to 4 months after the first injection: after 6 months it appeared in general to have declined. The rates of loss of antitoxin in individual guinea-pigs after the second injection showed considerable variation. In general the amount of antitoxin lost by good responders, from 10 days to 6 months after the second injection, decreased as the interval between the injections was increased. Considerable variation was found in the amounts of antitoxin lost by some animals treated in the same manner.

The results obtained using distinguishable guinea-pigs and testing individual sera show the nature of the essential information lost by testing pooled sera. It is suggested that the results obtained by some workers using pooled serum might not have been obtained had individual sera been titrated. Erroneous conclusions concerning fundamental processes may at times have been drawn in consequence.

There is little evidence to support Holt's conception of "pure" primary and "pure" secondary responses, or the suggestion that a secondary response "leap" is due to the release of stored antitoxin.

Wood, W. B., Jr., Smith, M. R., Perry, W. D. & Berry, J. W. (1951). **Studies on the cellular immunology of acute bacteriemia. I. Intravascular leucocytic reaction and surface phagocytosis.**—*J. exp. Med.* **94**, 521-534. [Authors' summary copied *verbatim.*] **1027**

Evidence has been presented that the introduction of large numbers of bacteria into the blood stream causes a widespread intravascular reaction, characterized by the sticking of leucocytes to the endothelium of capillaries, arterioles, and venules. The adherent granulocytes promptly become motile and thus potentially phagocytic. This intravascular leucocytic response affords a rapid and efficient mobilization of a vast number of active phagocytes within the bloodstream. In some of the smaller vessels of both the systemic and pulmonary circulation the reaction is accompanied by the deposition of what appears to be intravascular fibrin.

Direct observation by the rabbit ear chamber technique has revealed that leucocytes thus mobilized in small peripheral vessels are capable of phagocyting fully encapsulated Friendländer's bacilli in the absence of antibody. Ingestion of the encapsulated blood-borne bacteria results from surface phagocytosis and occurs primarily in those vessels in which the flow of blood is either slowed or has temporarily stopped altogether. Leucocytes can be seen to phagocyte the organisms by first trapping them against the walls of the vessels or against adjacent leucocytes. Bacteria caught in the interstices of the intravascular "fibrin" may likewise be immobilized and readily phagocyted. Thus granulocytes without the aid of opsonins, are able to ingest and destroy encapsulated blood-borne bacteria by the same mechanisms that operate in extravascular tissues.

It is concluded from these studies that intravascular surface phagocytosis by polymorphonuclear leucocytes supplements the well known phagocytic activities of the reticuloendothelial cells and therefore serves as an important defense of the host in acute infections caused by encapsulated bacteria and complicated by bacteriemia.

Smith, H. (1951). **The virulence enhancing action of mucins; a survey of human mucins**

and mucosal extracts for virulence enhancing activity.—*J. infect. Dis.* **88,** 207-211. [Author's summary slightly modified.] **1028**

Preparations from human saliva, stomach, small intestine, large intestine, nasal mucus, pseudomucinous ovarian cyst fluid, umbilical cord, bronchial mucus and hog gastric mucus were tested for activity in enchancing the virulence of *Salmonella typhi*. Without exception, all preparations proved to be active.

The confusing issue which thus arises of the role of mucins in the attack on epithelial surfaces by pathogens is discussed. The virulence enhancing factor of hog gastric mucin has no connection with the "virus receptor substance".

MacCabe, A. F. (1951). **The mode of action of mucin in promoting bacterial infection.**—*Edinb. med. J.* **58,** 377-391. **1029**

Gastric mucin enhanced bacterial infection by interference with, and destruction of the leucocytes and their vital action. The active principle is of protein nature.—John Seamer.

Jennings, A. R. (1951). **The effect of adrenal cortical extracts on the immunity responses of the rabbit.**—*J. comp. Path.* **61,** 180-187. [Author's summary copied *verbatim*.] **1030**

Two preparations of adrenocortical hormone had no appreciable effect upon the antibody responses of rabbits to *S. pullorum* and *Br. abortus* antigens respectively.

Nitrogen mustard hydrochloride had no effect upon circulating *S. pullorum* antibody.

Osgood, C. K. & Favour, C. B. (1951). **The effect of adrenocorticotropic hormone on inflammation due to tuberculin hypersensitivity and turpentine and on circulating antibody levels.**—*J. exp. Med.* **94,** 415-430. [Authors' summary slightly modified.] **1031**

The treatment with adrenocorticotropic hormone of g. pigs sensitized with heat-killed tubercle bacilli caused suppression of their skin reactivity to tuberculin. Similar animals treated with saline did not show this change.

Normal g. pigs treated with adrenocorticotropic hormone showed suppression of inflammation, but not necrosis, produced by intracutaneous oil of turpentine. There was slight, but probably not significant, diminution of inflammation during saline administration. Tuberculin complement-fixing antibody titres were not altered by either adrenocorticotropic hormone or saline administration.

Adrenocorticotropic hormone produced marked eosinopenia and lymphopenia in g. pigs.

Long, D. A., Miles, A. A. & Perry, W. L. M. (1951). **The action of dehydro-ascorbic acid and alloxan on tuberculin-sensitivity in guineapigs.**—*Lancet.* **261,** 902-904. [Authors' summary modified.] **1032**

Using the response to intradermal tuberculin as a measure of allergic hypersensitivity in albino g. pigs infected with B.C.G. it was found that whereas the desensitising action of ascorbic acid is inhibited by a factor in cabbage, that of dehydro-ascorbic acid is not; the desensitising action of dehydro-ascorbic acid, like that of ascorbic acid, is not inhibited by propylthiouracil; alloxan, like A.C.T.H. and cortisone, does not modify desensitisation by ascorbic acid; it desensitises g. pigs on a cabbage diet, and this desensitisation is inhibited by propylthiouracil.

In the absence of a full understanding of the biochemistry of desensitisation it was concluded that, within the experimental system used, the relation of ascorbic acid and its oxidation products to this process is must usefully summarised, in what is probably a grossly oversimplified manner, as follows. Dehydro-ascorbic acid is the desensitising agent in all cases; ascorbic acid causes desensitisation only after its oxidation to this form; the cabbage factor (possibly an -SH compound) inhibits the oxidation of ascorbic acid; A.C.T.H., cortisone, and alloxan act in the cabbage-fed g. pigs by antagonising the cabbage factor, thus facilitating the formation of dehydro-ascorbic acid. The influence of the thyroid on desensitisation may be exerted on a reducing system in which the cabbage factor is involved, and has no direct effect on the oxidation of ascorbic acid.

Suter, W. E. & Boyden, S. V. (1951). **Effect of injection of O.T. on circulating antibodies in guinea pigs infected with tubercle bacilli.**—*Fed. Proc.* **10,** 420. [Only abst. given. Abst. copied *verbatim*.] **1033**

Circulating antibodies against tuberculous antigens in rabbits infected with tubercle bacilli and in man suffering from clinical tuberculosis can be revealed by the hemagglutination test. Using sheep red cells sensitized with Lederle O.T. [Old Tuberculin], it is rarely possible to detect antibodies in guinea pigs infected with virulent, attenuated or avirulent strains unless large amounts of culture have been injected. However, intradermal administration of O.T. stimulates the production of serum antibodies in animals previously infected with BCG and other strains. In about one-third of the animals the injection of 0·1 ml. O.T. 1:1000 elicits the immediate appearance of transitory antibodies giving a typical pattern of sedimentation of the

sensitized red cells. Agglutinating antibodies appear 2–7 days after stimulation and disappear within 15–30 days, depending upon the height of the initial titer. Tenfold increase of the amount of O.T. enhances the effect as does the injection by the intracardial route. There seems to be no correlation between intensity of tuberculin skin reaction and titer of antibodies after stimulation. The stimulating effect of O.T. is detectable in some animals within a few days after infection with BCG and is maximal 3–8 weeks later. Furthermore, the effect of O.T. is conditioned by the dose of BCG injected.

FISHER, S. (1950). **The lysis by complement of sheep erythrocytes sensitized with extract of *Myco. tuberculosis* and anti-BCG rabbit serum.**—*Aust. J. exp. Biol. med. Sci.* **28,** 613-618. [Author's summary slightly modified.] **1034**

Sheep erythrocytes, coated with an extract of the phenol insoluble residue of tubercle bacilli, and suspended in dilutions of the inactivated serum of a rabbit immunized with B.C.G., are haemolyzed in the presence of g. pig complement. Addition of the sensitizing extract to the serum is capable of neutralizing the haemolytic antibody. Some aspects of the above phenomena were subjected to quantitative investigation.

BOWMAN, W. M., MAYER, M. M. & RAPP, H. J. (1951). **Kinetic studies on immune hemolysis. II. The reversibility of red cell-antibody combination and the resultant transfer of antibody from cell to cell during hemolysis.**—*J. exp. Med.* **94,** 87-110. [Authors' summary copied *verbatim*.] **1035**

The reversibility of the red cell-antibody combination has been demonstrated by means of experiments showing the transfer of antibody, either from red cell stromata to intact red cells, or from red cell to red cell. The extent of reversibility is variable with respect to different antisera.

The transfer of antibody from stromata to intact red cells is not dependent upon the action of complement. Transfer of antibody can also take place after interaction of the stromata-antibody complex with complement. As a result, antibody molecules can perform hemolytic work over and over again, provided complement is available, and this leads to kinetic behavior of a catalytic character.

DACIE, J. V. (1951). **Differences in the behaviour of sensitised red cells to agglutination by antiglobulin sera.**—*Lancet.* **261,** 954-955. [Author's summary copied *verbatim*.] **1036**

Human red cells sensitised with different types of incomplete antibodies react differently to rabbit anti-human-globulin sera neutralised or partially neutralised with human γ-globulin.

The agglutination of red cells sensitised by anti-D or the non-specific "warm" antibodies of acquired haemolytic anaemia is readily inhibited by a small concentration of γ-globulin. On the other hand, the agglutination of red cells sensitised by either normal cold antibodies or cold antibodies present in high concentrations or by the incomplete form of anti-A is only inhibited by much stronger concentrations of γ-globulin. The former antibodies thus appear to be γ-globulins; the latter type may not be.

COOMBS, R. R. A., GLEESON-WHITE, M. H. & HALL, J. G. (1951). **Factors influencing the agglutinability of red cells. II. The agglutination of bovine red cells previously classified as "inagglutinable" by the building up of an "antiglobulin : globulin lattice" on the sensitized cells.**]—*Brit. J. exp. Path.* **32,** 195-202. [Authors' summary copied *verbatim*.] **1037**

Sensitized suspensions of the class of bovine red cell previously classified as "inagglutinable" can be made to agglutinate by repeated alternate treatments with anti-globulin serum and globulin. The other two classes of bovine red cell behave in a similar manner, but fewer such treatments are required to obtain the same degree of agglutination.

These results support our hypothesis that the antigen receptors of the three classes of bovine red cell are situated at different levels in the cell wall, and that the building up of "anti-globulin: globulin lattices" from the sensitizing antibody molecules to the "outer effective limit of the cell wall" would bring about the agglutination of these cells.

STETSON, C. A., JR. (1951). **Similarities in the mechanisms determining the Arthus and Shwartzman phenomena.**—*J. exp. Med.* **94,** 347-358. [Author's summary copied *verbatim*.] **1038**

The intradermal injection of ovalbumin in rabbits sensitized to this antigen, under circumstances resulting in the elicitation of the Arthus phenomenon, causes a systemic reaction involving alterations in leucocytes and platelets, and results in cellular thrombosis of capillaries and veins in the injected skin areas. An abnormal metabolic process develops in the injected skin areas and may be the cause of the vulnerability of these vessels to leucocyte-platelet thrombosis. The form of vascular damage determining the Arthus phenomenon is similar to that already observed in the case of

the Shwartzman phenomenon, and the results of various metabolic, hematologic, and histologic studies indicate that the mechanisms resulting in both phenomena are closely related.

LAING, J. A. & BLAKEMORE, F. (1951). **Erythrocyte antibodies as a cause of abortion in cattle.** [Correspondence.]—*Nature, Lond.* **168,** 656-657. **1039**

By using an immune antiserum prepared in a heifer to define the presence of an antigen on the red cells of cattle, it was possible to mate four cows, the red cells of which did not contain the antigen, with bulls which possessed the antigen. The pregnant animals also received intravenous injections of blood thought to contain the antigen. In each case abortion resulted and the antibody titre rose after the abortion. It was concluded that iso-immunization was a possible cause of abortion in cattle and that the antibodies must be able to pass the placenta.—G. FULTON ROBERTS.

WIENER, A. S. (1951). **The half-life of passively acquired antibody globulin molecules in infants.**—*J. Exp. Med.* **94,** 213-221. [Author's summary copied *verbatim.*] **1040**

By following the titer of passively acquired Rh antibodies in newborn infants, it is calculated that the half-life of the placenta-passing Rh antibody molecule is approximately 30 days. Evidence is offered that this estimate applies not only to placenta-passing Rh antibodies but also to other placenta-passing antibodies, and not improbably to serum gamma globulin molecules in general.

Studies on the fate of free Rh antibodies in erythroblastotic babies show that these antibodies often are eliminated no more rapidly in Rh-positive babies than in Rh-negative babies. On the other hand, incompatible alpha and beta antibodies, as a rule, are quickly neutralized and eliminated from the body of newborn infants. These observations provide one explanation for the lower incidence of erythroblastosis due to A-B sensitization in comparison with cases resulting from Rh sensitization.

NELSON, R. J. (1951). **Effect of cortisone upon passive anaphylaxis in the guinea pig.**—*Proc. Soc. exp. Biol. N.Y.* **77,** 589-591. [Author's summary copied *verbatim.*] **1041**

Administration of cortisone prior to and subsequent to sensitization of the virginal female guinea pig with known quantities of antibody, inhibited the response of the smooth muscle of the small bowel to antigen, but failed to alter the sensitization of uterine smooth muscle.

VERCAUTEREN, R. (1951). **A cytochemical approach to the problem of the significance of blood and tissue eosinophilia.**—*Enzymologia.* **14.** 340-346. [In English. French summary. Abst. from author's summary.] **1042**

Study of the cytochemistry of the eosinophile leucocyte in the horse led to the hypothesis that these leucocytes are specialized in the detoxification of histamine by a mechanism using adrenalin and other phenolic compounds.

BENNETT, I. L., JR., BERTHONG, M. & RICH, A. R. (1951). **A further study of the effect of adrenocorticotropic hormone (ACTH) upon the experimental cardiovascular lesions produced by anaphylactic hypersensitivity.**—*Johns Hopk. Hosp. Bull.* **88,** 197-209. [Authors' summary slightly modified.] **1043**

This report deals with the effect of pituitary adrenocorticotropic hormone (ACTH) upon a second series of rabbits [see also *V.B.* **20,** 2673] sensitized with horse serum in the manner that favors the development of periarteritis nodosa and cardiac inflammatory lesions. Sixteen of nineteen sensitized untreated animals developed cardiovascular lesions of this type, whereas the lesions occurred in only 5 of 19 sensitized animals treated with ACTH.

This study, together with the previous observations on the effect of ACTH and of cortisone in similarly sensitized animals, provides substantial evidence that both ACTH and cortisone exert an inhibitory effect upon the development of the cardiovascular lesions of hypersensitivity. In these three separate studies, cardiovascular lesions occurred in 51 of 59 sensitized, untreated animals, and in only 14 of 59 sensitized animals treated with ACTH or cortisone.

The mechanism by means of which this inhibitory effect operates is obscure at present.

HOLBOROW, E. J. & KEECH, M. K. (1951). **Hyaluronidase skin spreading effect. An analysis of repeated measurements.**—*Brit. med. J.* Nov. 17th, 1173-1178. [Authors' summary copied *verbatim.*] **1044**

A method,using haemoglobin as indicator, of measuring the spreading effect of hyaluronidase in the skin [in human beings] on repeated occasions is described and its inherent variability assessed. This "spreading test" was performed in cases of rheumatic fever, rheumatoid arthritis, and connective-tissue disease. No significant difference was found in hyaluronidase spread in patients with acute rheumatic fever and in normal subjects. Hypersensitivity to the enzyme preparation develops readily; this limits

the usefulness of the method. Significant inhibition of spread and of hypersensitivity to hyaluronidase occurs in the skin of rheumatic fever patients under treatment with A.C.T.H. [adrenocorticotrophic hormone]. In dermatomyositis no significant spreading effect was observed with hyaluronidase.

BYWATERS, E. G. L., HOLBOROW, E. J. & KEECH, M. K. (1951). **Reconstitution of the dermal barrier to dye spread after hyaluronidase injection.**—*Brit. med. J.* Nov. 17th, 1178-1183. [Authors' summary slightly modified.] **1045**

A method for measuring the "reconstitution of the dermal barrier" is described and errors in the technique are analysed. The normal reconstitution time varies with age and lies between 24 and 42 hours.

The authors determined 214 reconstitution times—109 in rheumatic fever, 55 in rheumatoid arthritis, 27 in normal adults and children, and 23 in non-rheumatic controls. Reconstitution was prolonged in rheumatoid arthritis and in acute rheumatic fever, but returned to normal levels in the latter during treatment with salicylate, A.C.T.H., and cortisone, and during convalescence. Non-rheumatic tuberculous controls with raised sedimentation rates gave normal readings. It is concluded that in both rheumatoid arthritis and rheumatic fever there may well be an alteration in hyaluronic acid metabolism.

MATOLTSY, A. G. & MATOLTSY, M. (1951). **The action of histamine and antihistaminic substances on the endothelial cells of the small capillaries in the skin.**—*J. Pharmacol.* **102,** 237-249. [Authors' summary copied *verbatim.*] **1046**

When a solution of histamine was applied to the skin of rats and mice, and India ink injected intravenously, the endothelial cells of the small capillaries phagocytized the carbon particles in the treated area. No phagocytosis was observed beyond this area. The induced phagocytic function of the endothelial cells endured for fifteen minutes. Phagocytosis could be reactivated in the same site by repeated application of histamine, thus demonstrating the reversibility of the cellular alteration. It was found that phagocytic activity is diminished by small concentrations of antihistaminic substance and inhibited by higher concentrations (1%). The endothelial cells of the small capillaries in the skin traumatized by burning or freezing show similar phagocytosis. Diphenhydramine [β-dimethylaminoethylbenzohydryl ether] diminished the phagocytic activity in the case of mechanical injury. The possible mechanism of action of histamine and the antihistaminic substances is discussed.

See also abstr. **910** (haemagglutination test for TB.); **912** (B.C.G. in experimental TB. in mice); **924** (glucoside vaccine against swine erysipelas); **925** (stability of desiccated swine erysipelas vaccine); **928** (immunization of sheep during an outbreak of listeriasis); **929** (*Past. multocida* chick embryo vaccine); **939** (tube agglutination test in pullorum disease); **940** (serological diagnosis of pullorum disease); **941** (agglutination test in fowl typhoid); **977** (toxic effect of bovine F. & M. disease serum on g. pigs); **981** (serological identification of influenza virus antibodies); **982** (influenza); **984** (complement-fixation test in poliomyelitis); **992** (Japanese equine encephalomyelitis mouse brain vaccine); **995** (rinderpest); **1012** (Newcastle disease virus-neutralizing indexes of normal fowl sera); **1015** (Newcastle disease killed vaccine); **1023** (Q fever antibodies in slaughter cattle); **1090** (cadmium reaction).

PARASITES IN RELATION TO DISEASE [GENERAL]

CABLE, R. M. [Professor of Parasitology, Department of Biological Sciences, Purdue University, Lafayette, Indiana.] (1950). **An illustrated laboratory manual of parasitology.** pp. viii + 152. Minnesota: Burgess Publishing Co. Revised Edit. $2.50. **1047**

This book deals with a wide variety of parasites of interest to the veterinarian, the medical man and the zoologist, although each specialist will not necessarily be interested in the whole of the book. It begins with a list of parasitology textbooks and then the main text follows, divided into five parts: an introductory part dealing with zoological classification and nomenclature and with the measuring of microscopic objects; parts dealing respectively with the protozoa, the helminths and the arthropods, each covering a wide variety of types in some detail; laboratory techniques including *post mortem* methods, staining methods, the preparation of sections and diagnostic methods. The formulae of many important reagents and solutions used in parasitological laboratories are collected together in an appendix. There is an adequate index.

The book was originally compiled for use in the author's own practical classes and this constitutes its only defect, in that unless similar specimens and demonstrations to those of the author are available some of his directions for examining them would be inappropriate. The provision of suitable specimens should, however, be within the resources of most institutions. The instructions given are clear and seek to direct the student to examine the specimen himself and identify its structures, rather than be satisfied with merely reading about them. Well over a hundred clear and well labelled illustrations assist in this objective. This should continue to be a useful manual for use in parasitology practical classes.—T. E. GIBSON.

PARASITES IN RELATION TO DISEASE [ARTHROPODS]

PEMBERTON, C. E. (1947). **Some insect pests of the mainland of the United States occurring also in Hawaii.**—*Hawaii. Plant. Rec.* **51**, 85-87. [Abst. in *Rev. appl. Ent.* Ser. B. **39**, 103. (1951), copied *verbatim.*] **1048**

The author gives a list of 134 common insect pests (including some 20 injurious to man or animals) that are established in Hawaii and also occur on the mainland of the United States. Its main object is to indicate the importance of the enactment and enforcement of quarantine regulations against mainland insects coming into Hawaii on aircraft and ships.

ACOSTA BAYARDO, R. (1948). Informe preliminar acerca de infestación por niguas o *Tunga penetrans* en el Estado de Nayarit. **[Preliminary note on infestation by *T. penetrans* in Nayarit, Mexico.]**—*Medicina, Mex.* **28**, 251-253. [Abst. in *Rev. appl. Ent.* Ser. B. **39**, 130. (1951), modified.] **1049**

In April 1948, 40–95 per cent of the inhabitants in four settlements in the Mexican State of Nayarit were found to be infested by *Tunga penetrans*. The preferred sites were the soles of the feet and the toes. Infestation was also observed in pigs, dogs and cats. The outbreak appeared to have originated late in 1947, and there was some evidence that it was due to an influx of labourers from the coastal region of Michoacán. Hygienic conditions in the settlements were poor, and adequate clothing and footwear lacking.

BRUCE, W. N. (1948). **Studies on the biological requirements of the cat flea.**—*Ann. ent. Soc. Amer.* **41**, 346-352. [Abst. in *Rev. appl. Ent.* Ser. B. **39**, Part 7. 125. (1951), copied *verbatim.*] **1050**

The food requirements of larvae of *Ctenocephalides felis* (Bch.) and the most favourable conditions for growth and survival were studied with a view to developing a standardised rearing procedure. Eggs were procured from a large sheet of paper placed beneath the hardware cloth floor of a cage containing two cats. They were sifted to remove débris and incubated for 24 hours. The developing embryo could then be detected with a binocular microscope, and 100 viable eggs were transferred by means of an aspirator to each petri dish used in the observations. The affecting variables studied were quantity of dried blood, quantity of sand used as substrate, amount of dried brewer's yeast, effect of crowding, diameter of rearing dish, temperature, humidity, food materials, essential dietary components and synthetic diets.

The best growth and survival were obtained when larvae from 100 viable eggs were reared in a medium consisting of 1 gm. dried ox blood, 50 mg. brewer's yeast and 4 gm. clean sand in a 5–10 cm. petri dish, and kept at a temperature of 80 or 90°F. with a relative humidity of 65–90 per cent.

SEDDON, H. R. (1951). **Diseases of domestic animals in Australia. Part 2. Fly, louse and flea infestations.** pp. 173. Department of Health, Australia. Service publication (Division of Veterinary Hygiene) No. 6. **1051**

Part of a general survey [see also *V.B.* **22**, 158], this publication is the first of two on the arthropod parasites.

The spread of the buffalo fly (*Siphona exigua*) from the Northern Territory into North Queensland and thence into coastal Queensland is illustrated in a series of maps. Another map suggests the possible climatic limits for the fly.

The sheep blowfly problem in Australia has been the subject of an enormous amount of research by entomologists, veterinarians and others. This work is described in detail and is illustrated with diagrams, photographs and maps.

The geographical distribution of *Melophagus ovinus, Damalinia ovis* and *Echidnophaga gallinacea* is shown in maps.

—H. McL. GORDON.

QUARTERMAN, K. D., PARKHURST, J. D. & DUNN, W. J. (1951). **D.D.T. for control of stable fly, or dog fly, in Northwestern Florida.**—*J. econ. Ent.* **44**, 61-65. [Abst. from authors' summary.] **1052**

In 1945 and 1946 D.D.T. surface sprays replaced the saturation sprays of creosote and water for the control of *Stomoxys calcitrans* breeding in beach deposits of marine grasses along shores. An apparatus, installed in a swamp glider, constituted an efficient unit for applying D.D.T. surface sprays. The work was successful.

SUTER, H. (1950). Essai d'elimination de *Glossina fusca* par aspersion de betes piegeuses au D.D.T. **[An attempt to eradicate *Glossina fusca* by spraying bait-animals with D.D.T.]** —*Bull. bibliogr. Bur. interafr. Tsetse.* No. 6. pp. 117-119. **1053**

S. concluded that a dense population of *G. fusca* can be eliminated by the use of a 1% suspension of D.D.T. wettable powder, sprayed once a week on bait donkeys which are led

along paths corresponding to former game routes. Good results can be obtained by this method in vast plain areas with intersecting forest galleries. At the same time, cattle breeding, agriculture etc. must be practised in the area in order to get rid of game animals on which the fly feeds.—H. Paver.

Harrison, R. A. (1951). **The occurrence in New Zealand of houseflies resistant to D.D.T.**—*N.Z. J. Sci. Tech.* Sect. B. **32**, No. 5. pp. 40-43. [Author's summary copied *verbatim.*] **1054**

Six lines of houseflies were collected from DDT-treated premises in Auckland and bred in the laboratory. The original flies showed no abnormal mortality immediately after capture, and knockdown was slower and mortality less than for laboratory flies when placed on DDT residues.

Mortality of field lines 24 hours after exposure to DDT for periods of 1, 2, 4, 8, 16, and 32 minutes was much less than mortality of laboratory flies.

Maretić, Z. (1951). Beobachtungen über Pathologie und Klinik des Latrodektismus in Istrien. (1948-1950). [**Pathology and treatment of *Latrodectus* spider bites in Istria, North-East Italy. (1948-1950).**]—*Acta trop.* **8**, 136-144. [In German.] **1055**

An account of the effects on human beings of the bites of *Latrodectus* spiders in Istria, Italy. Convalescent serum from patients so bitten protected laboratory animals from the bites of the spiders.—R. Marshall.

Enigk, K. & Grittner, I. (1951). Die Sarcoptesräude des Goldhamsters. [**Sarcoptic mange in golden hamsters.**]—*Z. Parasitenk.* **15**, 25-33. **1056**

Sarcoptic mange in the golden hamster is caused by a mite, morphologically and biologically similar to that of the rat mite, *Sarcoptes anacanthos*, the rat being the main host.

—M. L. Clarke.

Da Graña, A. (1949). Tratamiento de las formas no complicadas de demodeccia del perro por el jabón cálcico de aceite de chaulmoogra, por vía oral. [**Treatment of demodectic mange in dogs with the calcium soap of chaulmoogra oil** *per os.*]—*Rev. Fac. Agron. Vet., B. Aires.* **12**, 159-165. [English summary.] **1057**

Twenty-three dogs with advanced, demodectic mange were given *per os* the calcium soap of chaulmoogra oil in daily doses corresponding to 0·2–0·4 g. of the oil, according to size, for periods varying from 1–3 months. 19 were cured; 12, followed up for two years, did not relapse. In the remaining four the lesions either improved or remained stationary, while the number of demodex parasites in skin smears was greatly reduced.

The drug was well tolerated by most of the animals; the slight and transitory signs of intolerance seen in a few instances subsided upon discontinuation and did not re-appear when treatment was resumed at a lower dosage.

—G. P. Marshall.

See also absts. **962** (occurrence of *T. conorhini* in *Triatoma*); **990** (equine encephalomyelitis virus from mites); **1047** and **1233** (books, parasitology).

PARASITES IN RELATION TO DISEASE [HELMINTHS]

Raper, A. B. (1951). *Schistosoma bovis* **infection in man.**—*E. Afr. med. J.* **28**, 50-54. **1058**

R. gave a useful condensed account of speculation and observation in the past concerning the species of schistosome worms that parasitize human beings. He referred to the work of MacHattie in Iraq 20 years ago. That author had criticized certain authors concerning the identity of certain schistosome eggs and he had stated that *S. bovis* is not infective to man.

R. described the illness of a European in Uganda who had bathed in an artificial swimming pool near Lake Victoria. The infection was transient. Details of ova in the faeces were given: they were considered to be those of *S. bovis*.—J. H. Rose.

Kopsch, F. (1949). Beobachtungen und Erfahrungen beim Züchten des *Limnaeus stagnalis*. [**Observations and experiments on culture of *Limnaea stagnalis*.**]—*Anat. Anz.* **97**, 145-151. [Abst. from abst. in *Excerpta Med.* Sect. 1. **4**, 243. (1950).] **1059**

Report on culture methods, oviposition and longevity. Oviposition is provoked by change of water; either of a slightly lower temperature or of the same temperature. The possibility that the oxygen content of the water might be the determining factor was not considered.

Kates, K. C. & Goldberg, A. (1951). **The pathogenicity of the common sheep tapeworm,** *Moniezia expansa*.—*Proc. helminth.*

Soc., Wash. **18**, 87-101. [Authors' summary copied *verbatim.*] **1060**

The important literature on the pathogenicity of *Moniezia* spp. to ruminants, especially that of *M. expansa* to sheep, is briefly summarized.

Heavy infections of *M. expansa* were induced experimentally in 14 lambs by feeding 121 to 411 cysticercoids per lamb. Seven of the parasitized lambs were autopsied approximately one month after being fed cysticercoids, and from 9 to 114 tapeworms were recovered from each lamb. Six of these lambs had over 50 tapeworms each. The volume of moist tapeworm material varied from 55 to 160 cc per lamb. The tapeworms obtained from the lamb having only 9 parasites were all large and gravid, while those from the other six lambs varied greatly in size and in development—from immature to gravid specimens.

Seven of the infected lambs were observed for approximately two months before they were killed and examined for tapeworms. Six were tapeworm-free at autopsy, while one lamb still retained 68 tapeworms of variable sizes. All these lambs expelled rather large quantities of tapeworm material in the feces, much of it being non-gravid pieces of strobilae, and some probably were complete worms although not identifiable as such.

The infections did not result in any observable injurious effects to the lambs, or any significant retardation in growth in comparison with that of the controls.

PIPKIN, A. C., RIZK, E. & BALIKIAN, G. P. (1951). **Echinococcosis in the Near East and its incidence in animal hosts.**—*Trans. R. Soc. trop. Med. Hyg.* **45**, 253-260. **1061**

A survey of the incidence of echinococcosis in human beings, dogs, sheep, cattle and camels. 17–33% of dogs were affected.

—M. L. CLARKE.

HILL, C. H. (1951). **The recovery of encapsulated, infective larvae of *Trichinella spiralis* relatively free of muscle tissue.**—*Proc. helminth. Soc., Wash.* **18**, 114-120. [Abst. from author's summary.] **1062**

A new method of quickly determining the presence of *T. spiralis* in muscle tissue has been described. In employing it, a choice of sedimentation, which requires 35 to 50 min. and a small amount of blended material, and of screening, which requires about 5 min. and the use of either gelatinous or voluminous blended material, is offered.

Experimental evidence is given that the new technique is equal to the digestion technique in its ability to detect infections of small intensity and is approximate to it in the numbers of larvae recovered from heavier infections. Larvae so recovered by the new technique seem to possess greater infectivity than those recovered by the digestion method.

ANDERSON, G. W., GODBEY, E. G. & DURANT, A. L. (1951). **The lethal effect of benzene hexachloride and the delta isomer on swine kidney worm larvae.**—*J. Amer. vet. med. Ass.* **119**, 293-294. **1063**

The γ-isomer and the δ-isomer of benzene hexachloride destroy the larvae of the swine kidney worm, *Stephanurus dentatus*. The δ-isomer, 6% concentration, was not toxic to young pigs.—G. DAVIES.

WHITLOCK, J. H. (1949). **The relationship of nutrition to the development of the trichostrongylidoses.** — *Cornell Vet.* **39**, 146-182. **1064**

Using 22 lambs the effect of dried brewer's yeast was tried in treatment of trichostrongylidoses under controlled conditions in a natural outbreak, the lambs being allowed to run on grass pasture in summer and autumn. In a second experiment 65 lambs were used in an attempt to reproduce the trichostrongylosis as before and to determine whether yeast and supplemental feeding designed to be optimal had any influence on the course of the disease.

Diet appeared to influence the number of trichostrongylids and of species establishing themselves in sheep. Experimental animals on optimum diets had less growth distortion from the parasites but had more anaemia and harboured more *Haemonchus* than the pasture-fed animals. The latter had pronounced distortion in growth and in a further similar test using 85 lambs on the experimental pasture, massive infestations with *Ostertagia* and *Cooperia* were found when they were killed three months later. Improved heavily fertilized pastures did not necessarily prevent malnutrition. Prenatal and post-natal nutrition was of great importance. It is probable that mere overcrowding is of less significance than caloric intake in the prevention and control of the trichostrongylidoses.—JAS. G. O'SULLIVAN.

GUILHON, J. & OBRY, J. (1951). Action du gallate d'isopropyle sur les strongylidés gastro-intestinaux du mouton. [**Anthelmintic action of isopropyl gallate in sheep.**]—*Bull. Acad. vét. Fr.* **24**, 348-350. **1065**

Isopropyl gallate is almost without toxic action upon sheep, but exerts only a very feeble

action upon trichostrongylids in the intestinal tract, even in doses up to 400 mg. per kg. body weight.—F. R. HARRIS.

TURNER, J. H. (1951). **Counting *Nematodirus spathiger* eggs in sheep dung.**—*Proc. helminth. Soc., Wash.* **18,** 132-135. [Author's summary copied *verbatim.*] **1066**

The efficiency of the direct centrifugal flotation [D.C.F.] method was studied in regard to counting *Nematodirus spathiger* eggs in sheep dung. Duplicate preparations and counts were made from each of 42 fecal samples, utilizing five coverslips per tube.

It was found that an average of 66 percent of the total eggs counted on five coverslips were recovered on the first coverslip, 88 percent on first and second combined, 96·2 percent on three consecutive coverslips, 98·9 percent on four, and the remainder on the fifth. The total eggs obtained from all five coverslips was considered to be a 100 percent of the eggs in the fecal sample, as preliminary counts of a sixth coverslip were generally negative.

It is concluded, therefore, that if it is desired to count more than 90 percent of the *N. spathiger* eggs in a fecal sample by the D.C.F. method, the eggs on at least three coverslips from each preparation should be counted in duplicate.

I. HUDSON, J. R. (1951). **Notes on husk.**—*Vet. Rec.* **63,** 701-703. Discussion pp. 704-706. **1067**

II. TAYLOR, E. L. (1951). **Further notes on husk.**—*Ibid.* 703-704. Discussion pp. 704-706. **1068**

I. H. described mainly husk in adult cattle. As diagnosis by faecal examination is often very difficult in such cases, intradermal and complement-fixation tests have been introduced, but are not wholly satisfactory.

II. T. referred to inaccuracies in the classical concept of husk, the finding of microscopic larvae in the lungs of sheep several weeks after experimental infection, the possibility of a virus producing symptoms identical to those of husk, and the failure of "anthiomaline" [lithium antimony thiomalate] to give satisfactory results in a controlled experiment.

In discussion on the paper several forms of treatment were mentioned, and comparisons were made of the climatic and herbage conditions in a "good" and "bad" husk year. Questions were also raised concerning diagnosis and immune reactions.—M. L. CLARKE.

FLORENT, H. (1951). La bronchite vermineuse; son traitement. **[Treatment of verminous bronchitis in cattle with antimosan.]**—*Ann. Méd. vét.* **95,** 270-272. **1069**

F. used intravenous injection of antimosan (a complex salt of antimony and catechol-potassium sulphonate). Three injections of 25 ml. at three-day intervals were given to a group of calves out of which 11 had died, and to 15 young severely affected cows, and to other cattle in advanced stages of emaciation from the infestation. He claimed that the results were good.—K. J. SINCLAIR.

MALHERBE, W. D. (1951). **The diagnosis of *Filaroides osleri* (Cobbold 1897) infestation.**—*J. S. Afr. vet. med. Ass.* **22,** 129-130. **1070**

Under intravenous barbiturate sodium narcosis swab material is collected from the bifurcation of the bronchi in dogs; the material is then examined directly under a low power of the microscope or after centrifugation.

TODD, A. C. & HANSEN, M. F. (1951). **The economic import of host resistance to helminth infection.**—*Amer. J. vet. Res.* **12,** 58-64. **1071**

In an experiment with 566 chickens each exposed to about 50 infective eggs of *Ascaridia galli,* during the three weeks that the chicks were under observation, progressively greater weight gains and progressively greater worm lengths were found to accompany progressive increases in the number of worms present. Data indicate that the chickens sustain greater injury from immature stages of the parasite. This illustrates a theory that energy employed by the host in resisting infection, measured by decreased percentage development and size of the parasite, prevents maximum efficient weight gains.—G. M. URQUHART.

SADUN, E. H. (1951). **Gonadal hormones in experimental *Ascaridia galli* infection in chickens.**—*Exp. Parasit.* **1,** 70-82. [Author's summary copied *verbatim.*] **1072**

Repeated injections of α-estradiol benzoate in immature females, and of testosterone propionate in immature males at the times and doses used, seemed to enable chickens to eliminate *Ascaridia galli* worms at a greater rate than the untreated controls. No sex difference in number of worms harbored was observed between normal males and females within the limits of age studied. The increase in resistance in hosts that received homologous sex hormones was similar in males and in females.

Measurements of worms recovered indicated that gonadal hormones or their products may possibly have an effect upon the growth of the parasites. Injections of α-estradiol benzoate seemed to cause a temporary retardation in the mean rate of growth of the worms,

whereas injections of testosterone propionate seemed to cause a temporary acceleration.

BUXTON, J. C., FORD, C. M. & MUNRO, I. B. (1952). **Infestation of domestic ducks with *Acuaria* (*Echinuria*) *uncinata*.**—*Vet. Rec.* **64,** 5-6. [Authors' summary slightly modified.] **1073**

An account is given of high mortality in one large flock of ducks caused by infestation of the proventricular lining with nematode worms, *Acuaria* (*Echinuria*) *uncinata*. No previous record can be found of the occurrence of this condition in Britain. The disease began by running an acute course, during which deaths were sudden and mortality high. Later a more chronic stage became apparent, with progressive emaciation followed by death. Post-mortem lesions differed markedly in the two forms of the disease.

It is thought that the condition originated from the deposition by wild aquatic birds of faeces containing worm eggs into a lake infested with *Daphnia* and *Cyclops* which acted as intermediate hosts for the parasites before being swallowed by the ducks.

See also absts. **1047** and **1233** (books, parasitology); **1232** (report, U.S.A.).

SPONTANEOUS AND TRANSMISSIBLE NEOPLASMS AND LEUCAEMIAS [INCLUDING FOWL PARALYSIS]

PLUMMER, P. J. G. (1951). **A survey of sixty tumours from domesticated animals.**—*Canad. J. comp. Med.* **15,** 231-252. [Author's summary slightly modified.] **1074**

This is the second progress report [see also *V.B.* **22,** 166] in a survey now in progress to ascertain the types of tumours occurring in Canadian domestic animals. In the past two years 60 tumours have been submitted for study. Thirty-seven were from cattle, nine from swine, seven from dogs, two from cats, four from chickens and one from a horse. The numbers examined were insufficient for conclusions but to-date the most common tumours of cattle and swine were lymphosarcoma and embryonal nephroma respectively. Too few growths have been seen from other species to form any opinion.

The tumours were classified on their microscopical appearance only. No attempt is made to describe this in detail; that which has been given is an attempt to justify the diagnosis made. The majority of the growths are typical examples of the type to which they were classified.

HUEPER, W. C. (1950). **Environmental cancer hazards caused by industrial air pollution. Introductory comment to the discussion.**—*Arch. indust. Hyg. occup. Med.* **2,** 325-328. **1075**

H. discussed the various hazards caused by industrial air pollution especially in regard to combustion and fractionation products of coal and natural mineral oils. A table is given listing carcinogenic agents, type of contact and the site of the cancer, in man; and potential environmental carcinogenic agents and cancer sites as tested on small laboratory animals. The control of these hazards depends upon (a) reliable qualitative and quantitative demonstration of carcinogenic agents in the air around establishments suspected of producing them; (b) epidemological studies of cancer incidence in the population living in the fume disposal zone of such plants and (c) the institution of effective preventive measures against further release of such products.—E.M.J.

RATHER, L. J. (1951). **A note on the origin of multinucleated giant cells from vascular channels in tumors. Tumors arising in thyroid gland, bone, and soft tissue.**—*Arch. Path.* **52,** 98-103. [Author's summary and conclusions copied *verbatim*.] **1076**

The significance of these findings seems to be that multinucleated giant cells may originate as reactive formations in blood vascular channels in a variety of otherwise unrelated lesions, including tumors of the thyroid, bone and soft tissues. In some tumors of angioblastic nature the multinucleated cells are actually part of the tumor proper. Whether occurring in benign or in malignant tumors, or in non-neoplastic lesions, their site of origin may be the same. Because of their non-specificity of occurrence these multinucleated giant cells are unsuited for the classification of such lesions.

FRIBERG, U., GRAF, W. & ÅBERG, B. (1951). **On the histochemistry of the mast cells.**—*Acta path. microbiol. scand.* **29,** 197-203. [In English. Authors' summary modified.] **1077**

The literature after 1938 on the histochemistry of mast cells is reviewed. An account is given of some experiments of our own which support the widely accepted view that heparin is confined to the mast cell granules. Periodic acid-leucofuchsine stained granules as well as intergranular substances in the cells, indicating

the possibility of the presence of heparin precursors in the mast cells.

HOWES, E. L. (1951). **Cortisone and homologous transplantations of tumors.**—*Yale. J. Biol. Med.* **23,** 454-461. [Author's conclusions copied *verbatim.*] **1078**

Parenteral administration of cortisone seems to improve the possibility of homologous transplantation of tumors, particularly if the tumor shows some tendency toward homologous transplantation. Diminution of awareness of the host is offered as a possible explanation.

MALMGREN, R. A. & LAW, L. W. (1951). **Effect of anti-viral substances on the mouse mammary tumor milk agent** *in vivo.*—*Cancer Res.* **11,** 697-699. [Authors' summary copied *verbatim.*] **1079**

The effect of several anti-viral agents was studied in C3H mice containing the mammary tumor milk agent and in strain C mice given the agent during the course of treatment.

Aureomycin, chloramphenicol, and sodium phenosulfazole (Darvisul), when used in maximum tolerated doses, did not affect the tumor-producing properties of the milk agent. Streptomycin did not influence the incidence of mammary tumors in the strains studied, but the mean tumor age was lowered in C mice given the mammary tumor milk agent.

SOUTHAM, C. M., BRONSTEIN, B. & WEBBER, L. F. (1951). **Effect of West Nile and Ilheus viruses on mouse leukemias.**—*Cancer Res.* **11,** 669-675. [Authors' summary copied *verbatim.*] **1080**

Infections with West Nile or Ilheus viruses were established in mice bearing Ak4, Ak4R, or Ak9421 leukemia of varying duration. It was demonstrated that both of these viruses temporarily inhibit leukemic leukocytosis and infiltration, even when injected in the late stage of those leukemias. There was no significant increase in survival time in the virus-treated mice. Evidence was obtained which indicates that virus was present in, or on, the leukemic cells.

NUTRITIONAL AND METABOLIC DISORDERS

WAGENER, K. (1950). Carences alimentaires. Leurs répercussions sur la genèse des maladies infectieuses. **[The relationship of nutritional deficiencies to infectious disease.]**—*Bull. Off. internat. Epiz.* **34,** 284-306. **1081**

A deficiency of vitamin A is considered to contribute to the occurrence of fowl cholera, fowl pox, pasteurellosis of sheep and lambs, certain forms of dermatitis, and coccidiosis and salmonellosis of pigs; the invasion of parasites is aided by deficiencies of this vitamin. A beneficial effect of adequate vitamin C intake is shown in cases of febrile infection, swine erysipelas, purpura haemorrhagica and infections of the respiratory passages. Deficiencies of minerals in combination with vitamin A may have, through their effect upon the incidence of infections: brucellosis and enteritis of the new born, an effect upon reproductive activity and the well-being of the young animal. Phosphorus deficiency in the soil contributes to the occurrence of botulism in cattle. Modern dietetic methods causing early maturity may have an effect upon the occurrence of swine erysipelas, brucellosis and fowl paralysis.—R. MARSHALL.

GORHAM, J. R., BOE, N. & BAKER, G. A. (1951). **Experimental "yellow fat" disease in pigs.**—*Cornell Vet.* **41,** 332-338. [Authors' summary copied *verbatim.*] **1082**

Young pigs placed on diets containing high percentages of fish scrap developed an acid-fast pigment in the adipose tissue. In pigs receiving supplemental tocopherol, the deposition of pigment was reduced.

PISTOR, W. J., NESBITT, J. C. & CARDON, B. P. (1950). **The influence of high salt intake on the physiology of ruminants.**—*J. Amer. vet. med. Ass.* **117,** 104-105. [Only abst. given. Abst. from abst.] **1083**

In five pregnant Hereford cows fed for seven months, from three months before calving, on a maintenance ration plus 1 lb. salt daily, there were no ill-effects. Sodium chloride was determined in the blood, urine and faeces of the cows and calves. In another experiment changes in the amount of sodium chloride in intestinal contents, blood, urine and faeces following drenching (1 g. sodium chloride per lb. body weight) were studied.

From a further study of salt: water relationships it was concluded that death following excessive salt intake was caused by tissue dehydration.—P. H. HERBERT.

ROBERTS, S. J., RICKARD, C. G. & BENTINCK-SMITH, J. (1951). **A clinical and laboratory evaluation of the Sulkowitch test as a diagnostic aid in bovine hypocalcemia.**—*J. Amer. vet. med. Ass.* **119,** 380-382. [Authors' conclusion copied *verbatim.*] **1084**

In a study of 56 hypocalcemic and normal

cows, the Sulkowitch test applied to the urine did not give an indication of the serum calcium level and, thus, was no aid in the field diagnosis of hypocalcemia in the cow.

Moustgaard, J. & Olsen, N. J. H. (1951). **Investigations of serum copper in sows and pigs and stored copper in piglings.**—*Nord. Vet.-Med.* 3, 763-779. [In English. French and German summaries.] **1085**

Pregnant sows were given a copper supplement in their feed. The copper content in the serum rose from 180 μg. initially to 225 μg. per ml. at farrowing. Their piglets' serum had a similar copper content to that of piglets from untreated sows, and the stored copper content of the liver was 60–100% higher at delivery. No other difference was demonstrated with regard to other organs examined.—G. Davies.

Erb, R. E., Andrews, F. N., Hauge, S. M. & King, W. A. (1947). **Observations on vitamin A deficiency in young dairy bulls.**—*J. Dairy Sci.* 30, 687-702. **1086**

Thirteen bull calves 2–3 months old received until maturity a diet containing suboptimal levels of vitamin A, while nine control animals received a fully adequate amount. After six months on low intakes blindness occurred and sexual maturity, as assessed by sexual drive and quantity and quality of semen, was retarded. Pituitary cysts [after at least a period of 202 days] were present in all animals except the controls. The results indicated that when damage, particularly to the eye or the pituitary, occurs before puberty, it may become permanent.—E. M. Cruickshank.

Lousse, A. (1951). Les avitaminoses B du veau nouveau-né. [**Vitamin B deficiencies in new-born calves.**]—*Ann. Méd. vét.* 95, 245-255. **1087**

A general discussion; no new information. —F. R. Harris.

See also abst. **1231** (report, U.S.A.).

Broberg, G. (1949). Några alimentärt betingade muskeldegenerationer hos häst och nöt. [**Muscular degenerations of nutritional origin in horses and cattle.**]—*Nord. Vet.-Med.* 1, 258-265. [English summary.] **1088**

An account of muscle degeneration in cattle and horses in northern Österbotten, Finland. The outbreaks among young cattle at the beginning of the grazing period are thought to be caused by disturbance of the ruminal flora associated with too rapidly increased protein intake. In cattle light strips are found P.M. on the musculature, the muscles most usually affected being those of the shoulder, the back and the hind legs. In autumn cases of muscle stiffness and myohaemoglobinuria occur.

Among foals 2–6 weeks old born in April and May a combination of symptoms resembling tetanus and paralytic myohaemoglobinaemia is noted. Maxillary myositis in young horses occurs, but is rare, as is also an acute form in older stall fed animals in which the heart muscle as well as the skeletal is affected. Chronic cases and lingual muscle degeneration occur.

The aetiology is uncertain but may be caused by a too rapid increase in the intake of protein. Treatment with large doses of yeast and sulphanilamide reduced the mortality rate but the prognosis is still not good.—H. Boyd.

Hoflund, S. & Hedström, H. (1949). **The connection between deficiency diseases and disturbances in rumen digestion.**—*Acta Agric. Suecana.* 3, 121-134. [In English.] **1089**

The authors discussed the functions of the ruminal flora, assigning to fungi an especially important role. Rations maladjusted from one cause or another upset the balance between the infusoria, bacteria and fungi and their products, this disturbance resulting in metabolic disorders.—John Seamer.

DISEASES, GENERAL

Leemann, W. (1946). Die Cadmium-Reaktion nach Wunderly und Wuhrmann im Blutserum vom Pferd. [**The cadmium reaction in the blood serum of the horse.**]—*Inaug. Diss., Zürich.* pp. 50. **1090**

L. described a cadmium turbidity test based on changes in the relative proportion of protein in the blood of diseased horses. Cadmium sulphate solution was added to samples of serum and the degree of the resulting turbidity was used for diagnostic purposes as an indirect test. Results of reactions in healthy horses and in horses with broncho-pneumonia, strangles, purpura haemorrhagica, equine infectious anaemia, colic and diseases of various organs are given. There are 44 references.—E.G.

Romagnoli, A. (1949). La velocità di sedimentazione dei globuli rossi negli equini affetti da enfisema polmonare alveolare cronico. [**Erythrocyte sedimentation rate in horses affected with chronic pulmonary emphysema.**]—*Atti Soc. ital. Sci. vet.* 3, pp. 430-441. [English and French summaries.] **1091**

The sedimentation rate and volumetric index were determined in blood samples from 62 horses, 12 of which were normal, the remainder having chronic pulmonary emphysema. In all cases, a lowering of the sedimentation rate was observed after exercise but this was more marked in animals with pulmonary emphysema. The volumetric index rose after exercise in all cases but only in heavy breeds did the rise correspond to the severity of the emphysema. It was concluded that determination of the sedimentation rate is a useful adjunct to the clinical diagnosis of pulmonary emphysema.— J. A. NICHOLSON.

OLSON, C., JR. & COOK, R. H. (1951). **Attempts to produce bovine hyperkeratosis.**—*Amer. J. vet. Res.* **12,** 261-272. [Authors' summary copied *verbatim.*] **1092**

Bovine hyperkeratosis developed in experimental calves after they had been fed a supplemental feedstuff left over from a feeding trial [*V.B.* **21,** 2089] in which bovine hyperkeratosis developed among the calves. The new calves in which the disease was produced were of the same stock but were older than the calves involved in the original outbreak. A longer time and more feedstuff than in the original outbreak was necessary to produce the disease in older test calves. Bovine hyperkeratosis was developed in calves away from the environment of the original outbreak, thus eliminating environment as a factor. Test calves receiving the suspected feedstuff, and also in contact with sick calves, showed no more evidence of bovine hyperkeratosis than calves fed the suspected feed and having no contact with calves affected with bovine hyperkeratosis.

PERRIER, M. (1950). La maladie des regains dans la région de Carentan. [**"Aftermath" disease of cattle in the Carentan district, France. ("Fog fever", pulmonary emphysema).**]—*Thesis, Alfort.* pp. 69. **1093**

This thesis gives an interesting account of fog fever as it occurs in the country around Carentan at the foot of the Cherbourg peninsula. P. described the geography, geology and climate of the area before discussing the disease. Extracts from articles dating from 1827 are given which suggest very strongly that the condition was well known in that part of France 120 years ago.

The sections dealing with symptoms and pathology contain no additions to our knowledge of this disease. As a preventative P. recommends grazing aftermath for two days alternately with two days on a different type of pasture. If, of necessity, left on aftermath, animals should be examined several times a day and any showing signs of respiratory uneasiness should be housed and given hay. Treatment with nux vomica and digitalis is said to be helpful; but no satisfactory results were seen following the use of antihistaminics. Mild cases recover without attention: bad cases should be sent for slaughter as early as possible.

P. attributes the condition to the ingestion of rapidly growing plants, the chemical composition of which, particularly protein, is very different from that of normal plants. He considers that as the soil of the area is rich in nitrogen the herbage will accumulate more protein nitrogen even than is usual in aftermath. This food of abnormal composition produces very small lesions in the intestinal wall through which pass the auto-toxic products which cause the pulmonary emphysema. During spring and early summer the animals may, in addition, have been sensitized to vegetable proteins of certain plant species. [The theory, like others of the aetiology of fog fever, is supported only by circumstantial evidence.]

—J. RICHARD HUDSON.

ARTIOLI, D. & ZANACCA, G. (1949). Le alterazioni dei linfonodi renali nel "rene a macchie bianche" dei vitelli. [**Changes in the renal lymph nodes in "white-spotted kidney" in calves.**]—*Atti Soc. ital. Sci. vet.* **3,** pp. 298-303. [French and German summaries.] **1094**

Up to the present ten cases of white-spotted kidney have been seen in young calves in which atypical lesions were present. The most notable feature of these cases was enlargement of the lymph nodes, and histological examination suggested a myeloid metaplasia with a tendency to erythroblastosis and megakaryocytosis. The lesions were seen only in young calves and it is debatable whether they bore any relationship to white-spotted kidney disease or whether they represented some other disease process.—J. A. NICHOLSON.

ONO, Y. (1943). Über das Vorkommen von Enteritis diphtherica haemorrhagica bei den Kamelen. [**Haemorrhagic enteritis in camels.**]—*Jap. J. vet. Sci.* **5,** 113-114. [Abst. in *Biol. Abstr.* Sect. F. **25,** No. 8. p. 28. (1951), copied *verbatim.* Signed: A. G. KARLSON.] **1095**

Three cases are described of a hemorrhagic diphtheric enteritis which occurs sporadically in camels in Manchuria. The lesions, which are limited to the small intestine, consist of ulceration and a diffuse membraneous exudate. Hemorrhage is extensive. Microscopically there is edema, and hemorrhage of the sub-

mucosa and muscle layers. The kidneys reveal acute or subacute glomerulonephritis and there are subepicardial petechiae. The etiology is not known. Collections of Gram-negative bacilli could be seen in the intestinal lesions.

PULLAR, E. M. (1949). **The rectal temperature in normal and infected pigs.**—*Brit. vet. J.* **105,** 437-453. **1096**

P. made observations in Melbourne on 88 normal, 2–8-month-old pigs on the range of body temperature. In summer, temperatures were recorded either early in the morning or in the late afternoon to minimize the effect of a high environmental temperature.

The mean body temperature was 102·13° ± 0·413°F. and the range was 97·2° to 106·6°F. In approximately 18% of the normal pigs pyrexia resulted from excitement or fear until the animals became accustomed to handling.

Rules for testing the significance of apparent pyrexia are given.—D. LUKE.

WOODS, G. T. & BEAMER, P. D. (1951). **Gut edema in three Illinois swine herds.**—*J. Amer. vet. med. Ass.* **119,** 436-438. [Authors' summary slightly modified.] **1097**

Three cases of oedema disease in Illinois swine herds are described. Early symptomatic treatment with Epsom and Glauber salts, antihistamine and sodium thiosulphate of affected animals was apparently of value.

NEWTON, W. C. & SAMPSON, J. (1951). **Studies on baby pig mortality. VII. The effectiveness of certain sugars other than glucose in alleviating hypoglycemic coma in fasting newborn pigs.**—*Cornell Vet.* **41,** 377-381. [Authors' summary and conclusions modified.] **1098**

A report is made on the results of a study of the effectiveness of certain sugars other than glucose in alleviating hypoglycaemic coma in fasting new-born pigs.

Mannose was much less efficient in resuscitating comatose pigs than glucose but nevertheless proved effective in alleviating the symptoms of coma. Comatose pigs responded slowly to injections of galactose and maltose, but resuscitation required a much longer time and was less complete than that following an injection of glucose. Sucrose, fructose, and lactose were not effective in resuscitating hypoglycaemic comatose pigs. Glucose is the most effective and probably the only sugar that is immediately capable of resuscitating pigs in hypoglycaemic coma.

WEISS, B. (1949). Die Analogie des Staupesyndroms und der Tetanie des Menschen. **[The analogy between the canine distemper syndrome and tetany in human beings.]**—*Tierärztl. Umsch.* **4,** 381-385. **1099**

W. discussed the symptoms and different types of tetany in man and in particular its relation to parathyroid function and referred to the mode of action of parathyroid hormone and the effects of parathormone administration and parathyroidectomy. He compared the symptoms of hypoparathyroidism of man and those seen in the nervous form of canine distemper and in Teschen disease of pigs. He suggested that there is a conformity between the muscular cramps (initiated without obvious cause), muscular twitching, trophic disturbances of the lens, dental enamel and skin and alteration in the nails and hair in both distemper and human nails and hair in both distemper and tetany in human beings.—H. PLATT.

I. GRATZL, E. (1951). Die eosinophile Panostitis der Junghunde (Osteomyelitis der jungen Schäferhunde). **[Osteomyelitis in young dogs.]**—*Wien. tierärztl. Mschr.* **38,** 629-670. **1100**

II. BAUMANN, R. & POMMER, A. (1951). Die chronische Osteomyelitis der jungen Schäferhunde. **[Chronic osteomyelitis in young dogs.]**—*Ibid.* 670-676. [English, French and Italian summaries. Abst. from English summaries.] **1101**

I and II. Clinical symptoms, blood pictures and X-ray findings in osteomyelitis of the long bones of young German sheep-dogs were described. The disease is chronic and is stated to be caused by streptococci. It is usually preceded by infectious disease such as hard pad disease, leptospirosis or distemper.

THIÉRY, G. (1951). La fièvre rhumatismale du chien. "Maladie du collagène". **[Rheumatic fever or collagen disease in dogs.]**—*Rec. Méd. vét.* **127,** 129-142. **1102**

A clinical and histopathological account of two cases of rheumatism in dogs, resembling the disease in man. Desoxycorticosterone may be efficacious over a long period of time. Therapy could also include a search for the responsible antibody and its destruction.

—L. M. MARKSON.

I. & II. PLATT, H. (1951). **Chronic canine nephritis. II. A study of the parathyroid glands with particular reference to the "rubber jaw" syndrome. III. The skeletal system in "rubber jaw".**—*J. comp. Path.* **61,** 188-196 & 197-214. [Author's summaries modified. For part I, see *V.B.* **21,** 3319.] **1103**

I. A study of the position and number of parathyroid glandules in normal dogs. The

weight of parathyroid tissue per kg. body weight was determined in normal dogs, dogs with chronic nephritis and dogs with the "rubber jaw" syndrome.

There was a significant increase in the weight of parathyroid tissue in chronic nephritis and a considerably greater increase in dogs with "rubber jaw". It was concluded that the parathyroid hyperplasia in these conditions was probably secondary to prolonged renal insufficiency.

II. It has been shown that the bone lesions in "rubber jaw" are those of an osteodystrophia fibrosa and that, although the head is the most severely affected site, lesions of a similar type are present throughout most of the skeleton.

The results of histological examination of the skeletal system of seven dogs affected with various stages and degrees of nephritis are described. Three of these animals had well-marked osteodystrophic changes although the skeleton appeared clinically normal. The other four had similar changes of a lesser degree.

The relation of the "rubber jaw" syndrome to chronic renal insufficiency is discussed together with a review of some of the factors which appear to be of importance in the pathogenesis of canine osteodystrophy.

SCHOENMACKERS, J. (1950). Untersuchungen über supravitale Luftinjektionen in die linke Kammer des Katzenherzens. **[Injection of air into the left ventricle of the heart in living cats.]**—*Frankfurt. Z. Path.* **61**, 574-583. **1104**

Air, varying in amount from 10 to 18 ml. was injected slowly into the exposed left ventricle of eight cats (three decapitated, five under deep narcosis), respiration being maintained mechanically. The cats had just been used in pharmacological experiments lasting up to ten hours with substances affecting blood pressure. Tissues, fixed at an interval of 7–12 min. from the start of the injection, showed a loosening of structure (Gefügeauflockerung), with clear spaces showing in the arteries, veins, capillaries and lymph vessels. These changes were most obvious in the kidneys, and are described in detail. Sometimes, the glomerular tuft was ruptured from its vascular pole and air entered the capsular space and tubular lumen. Partial or sub-total glomerular necrosis was also found, and some appearances suggested a prolapse of the first part of the renal tubule back into the corresponding capsular space.—E. COTCHIN.

HUNT, E. L. (1951). **Developmental abnormalities in chick embryos treated with sugar.** —*Science.* **113**, 386-387. **1105**

Morphological abnormalities were found in 44·5% of the living embryos from 195 eggs in which the albumen had been inoculated with 1 ml. of a 2-M sucrose solution prior to incubation. 8·3% eggs similarly treated with saline had abnormalities. The nervous and circulatory systems of the embryos were most affected.

—G. V. LAUGIER.

MOON, V. H. & TERSHAKOVEC, G. A. (1951). **Dynamics of inflammation and of repair. I. The trigger mechanism of acute inflammation.** —*Arch. Path.* **52**, 369-377. [Authors' summary slightly modified.] **1106**

Earlier workers showed, by evidence which has not been questioned, that local hyperaemia and oedema result promptly from the effects of substances released by damaged cells. The authors' results support that interpretation. The experiments reported here indicate that substances derived from damaged cells also attract leucocytes into the area, thus completing the picture of beginning inflammation. Such substances appear to serve as the trigger mechanism by which forces are activated for local defence.

COOPERBERG, A. & SINGER, K. (1951). **The reaction of the bone marrow to high oxygen tension in normal and anemic guinea pigs.**—*J. Lab. clin. Med.* **37**, 936-947. [Authors' summary copied *verbatim*.] **1107**

The hematologic effects of exposure to high oxygen concentrations were studied in normal and in anemic guinea pigs with the intention of establishing correlations between the changes in the peripheral blood and the erythropoietic activity of the marrow. In normal animals the reticulocytopenia following the exposure is definitely caused by a marked erythrocytic hypoplasia of the marrow. In the acute hemolytic anemias produced by injection of anti-red cell serum, however, erythropoietic activity in the marrow is not depressed under the influence of the high oxygen tensions, although the reticulocyte output, in comparison with that of controls kept in air, is markedly decreased. It is assumed that in the presence of the hemolytic process, high oxygen tension inhibits predominantly the production or the release of the reticulocytes. No influence of the elevated oxygen concentration could be detected on either erythrocyte formation or reticulocyte release in acute hemorrhagic anemias.

RIBELIN, W. E. (1951). **Azoturia and the crush syndrome.**—*J. Amer. vet. med. Ass.* **119**, 284-288. [Author's summary modified.] **1108**

The similarities of muscular and renal lesions of the crush syndrome in man and those

of myohaemoglobinuria in the horse described. Brief mention is made of the paralytic myohaemoglobinuria, which occurs in man.

WILENS, S. L. (1951). **The nature of diffuse intimal thickening of arteries.**—*Amer. J. Path.* 27, 825-833. [Author's summary copied *verbatim*.] **1109**

Diffuse intimal thickening is more pronounced in arteries that commonly develop atherosclerosis than in those that are infrequently involved. It is present to a more marked degree in portions of the aorta that develop atherosclerotic plaques frequently than in those that seldom do so. Diffuse intimal thickening of the aorta increases progressively throughout life. It is more pronounced in men than in women. It is increased in the presence of hypertension. Diffuse intimal thickening of the aorta does not occur in species that do not develop atherosclerosis spontaneously. When cholesterol-fed rabbits are restored to a normal diet for protracted periods before sacrifice, fibrous intimal thickening of the aorta, analogous to that of man, is found. Lipid stains on the diffusely thickened aortic intima often reveal small deposits of lipid.

These observations suggest that the diffuse overgrowth of intimal tissue that occurs consistently early in life is not a natural developmental phenomenon but is related to the same mechanism that eventually leads to the formation of atherosclerotic plaques. This interpretation suggests that atherosclerosis is not a process that is limited to scattered areas of the arterial intima but is one that involves the entire intima.

UNGAR, H. (1951). **Transformation of the hepatic vasculature of rats following protracted experimental poisoning with carbon tetrachloride. Its possible relation to the formation of urate calculi in the urinary tract.**—*Amer. J. Path.* 27, 871-883. [Author's summary slightly modified.] **1110**

In previous experiments, urate calculi were shown to occur in association with coarsely nodular cirrhosis of the liver in white rats, following protracted treatment with carbon tetrachloride.

The experiments were repeated and the liver of rats was studied histologically following injection of the portal circulation with India ink.

An association was observed between the occurrence of urate calculi and severance of the hepatic parenchyma from the portal blood supply, which was held to be a result of the formation of intrahepatic portosystemic venous shunts.

The results of these experiments have certain implications for an understanding of the elimination of the uricolytic function of the liver and the "reversal" of experimental cirrhosis in rats.

HARRISON, R. G. (1951). **The influence of unilateral nephrectomy on the production of experimental arthritis in the albino rat.**—*Brit. med. J.* Dec. 1st, 1299-1304. [Author's summary copied *verbatim*.] **1111**

The production of arthritis has been studied in rats subjected to removal of the left kidney, given 1% saline to drink, and injected with D.C.A. [deoxycortone acetate].

It is suggested that the "sensitizing" effect of the unilateral nephrectomy is by virtue of a focal necrosis of the zona fasciculata of the adrenal cortex due to interference with adrenal arteries and resultant reduction in the secretion of gluco-corticoids. This provides experimental confirmation for the therapy of arthritis with cortisone.

The histochemical appearance of the adrenal cortex of arthritic rats is described.

The effect of other experimental techniques and infection on the production of hormonally induced arthritis in the rat is considered, and an assessment made of the relationship of this experimental arthritis to the aetiology of human arthritis.

JOHNSON, G. C., BAUER, F. C., JR., HIRSCH, E. F. & CARBONARO, L. (1951). **Lipemia of rabbits following unilateral occlusion of the renal vessels.**—*Arch. Path.* 52, 115-118. [Authors' summary copied *verbatim*.] **1112**

Unilateral ligation of the renal artery or vein or clamping the renal vein of rabbits for 12 to 20 min. produced a transient lipemia of about one to two weeks duration. All lipids participated in this increase, but the greatest increase was in the neutral-fat fraction.

NELSON, J. B. (1951). **Studies on endemic pneumonia of the albino rat. IV. Development of a rat colony free from respiratory infections.**—*J. exp. Med.* 94, 377-386. [Author's summary slightly modified.] **1113**

A colony of albino rats was developed from three breeders (not germ-free) originally delivered by Caesarian section and artificially reared in the laboratories of Professor James A. Reyniers. The colony has been maintained under quarantine since June, 1948, in the absence of any demonstrable involvement of the respiratory tract or of the middle ears.

At autopsy pleuropneumonia-like organisms, *Actinomyces muris-ratti*, and the virus-like agent associated with endemic pneumonia were not recoverable from the lungs or the nasal passages of 81 young and adult rats. During the same time interval the morbidity rate of pneumonia in another rat colony known to be free from infectious catarrh was 51% while the incidence of infection with the virus-like agent approached 100%.

WEST, G. B., SHEPHERD, D. M. & HUNTER, R. B. (1951). **Adrenaline and noradrenaline concentrations in adrenal glands at different ages and in some diseases.**—*Lancet*, **261**, 966-969. [Authors' summary copied *verbatim*.] **1114**

The total pressor activity in exhausted adrenal glands of 36 patients was 0·303 mg. per g. Of this total about 14% was noradrenaline. The relative amount of noradrenaline in the glands of 9 hypertensive patients was not significantly different from that found in other conditions. In a case of Addison's disease about 50% of the total catechol amines of the adrenal glands was noradrenaline. In children aged less than 70 days methylation of noradrenaline in the adrenal gland was very incomplete, about 90% of the catechol amines being noradrenaline. At this stage in life the organs of Zuckerkandl contain large quantities of noradrenaline and probably function as accessory tissue to the autonomic nervous system.

POISONS AND POISONING

LEWEY, F. H. (1950). **Neuropathological changes in nitrogen trichloride intoxication of dogs.**—*J. Neuropath. exp. Neurol.* **9**, 396-405. [Abst. in *Nutr. Abst. Rev.* **21**, 442. (1951), copied *verbatim*. Signed: A. N. WORDEN.] **1115**

The pathological changes in the central nervous system of dogs poisoned with agenised wheat flour are characterised by patchy liquefaction necrosis in the deep layers of the cerebral cortex and of the "U" fibres extending slightly into the white matter, and most pronounced in the hippocampus. In the cerebellum the Purkinje cells are poorly preserved and there are other degenerative changes, especially in the interconnecting system of the basket cells and their prolongations. Photomicrographs are shown of the above changes and of the normal histological appearance of the brains of dogs given large amounts of ClO_2 [chlorine dioxide], now being used instead of NCl_3 [nitrogen trichloride].

RADOMSKI, J. L. & WOODWARD, G. (1949). **Pharmacological studies on the causative agent of canine hysteria.**—*J. Pharmacol.* **95**, 429-437. **1116**

In this study the toxic material used in dogs and rabbits was commercial gum gluten (80% protein) which had been treated with 6 g. per kg. nitrogen trichloride (agenized gluten) [see also *V.B.* **21**, absts. 501, 502 and 503] to find the accumulation characteristics, the tendency to produce increased sensitivity on repeated administration, and possible synergists or antagonists. The value for the threshold daily dose for accumulation to occur was 70 mg. per kg. in dogs and 0·5–1 g. per kg. in rabbits, corresponding with acute toxicity values of 3·5 g. per kg. and 10 g. per kg. respectively.

The increased sensitivity produced by repeated administration remained after an interval of ten days; the threshold of reaction to metrazol (pentamethylenetetrazole) was lowered. Hysteria was not affected by the administration of ammonium chloride or sodium citrate, and neither diphenylhydantoin nor trimethadione suppressed it, but the two latter potentiated the production of convulsions and death by agene-treated gluten; and phenobarbital antagonized the production of hysteria.—E.M.J.

VAN BRAECKEL. (1950). Note au sujet de la toxicité du D.D.T. **[Toxicity of D.D.T. for cats.]**—*Ann. Soc. belge Med. trop.* **30**, 599-600. **1117**

The case history of a cat which died from D.D.T. poisoning is given. D.D.T. was used for indoor spraying and was ingested by the cat licking its fur.—H. PAVER.

CAMERON, G. R. & CHENG, K.-K. (1951). **Failure of oral D.D.T. to induce toxic changes in rats.**—*Brit. med. J.* Oct. 6th, 819-821. [Authors' summary copied *verbatim*.] **1118**

Rats given 0·36, 3·6, and 36 mg. D.D.T. per kg. daily for up to 60 weeks showed no lesions that were characteristic of chronic poisoning with D.D.T. The incidence of naturally occurring pathological lesions was equally distributed among the rats receiving D.D.T. and among the control rats receiving arachis oil alone. No significant structural disturbance has been found in the kidneys and heart.

ANON. (1950). **Poisonous properties of African star grass.**—*Qd. agric. J.* **71**, 117-120. **1119**

The distribution in Australia, growth habit and poisonous properties, of African Star Grass

(*Cynodon plectosoachyus*) are described. Data on the prussic acid content are given, indicating that with the grass grown near Brisbane 20 mg. % prussic acid, or three times as much as that usually regarded dangerous, may be present. With care in the grazing practice used, little trouble is likely, and it is considered that the valuable fodder properties of the plant outweigh the risks of poisoning.—H. PAVER.

KOBAYASHI, T. (1950). **Studies on the histopathologic changes of experimental cases of the "Ezonegi-poisoning" in horses.**—*Jap. J. vet. Sci.* **12,** 205-208. [English summary pp. 209-210.] **1120**

Poisoning of horses eating chives (*Allium schoenoprasum*) occurs in Japan. There is a haemolytic anaemia and degeneration and necrosis in the parenchymatous organs, with myeloid metaplasia.—JOHN SEAMER.

DO REGO CHAVES, L. (1950). Doença de sintomatologia nervosa causada por intoxicação pelo milho. **[A disease of the nervous system of horses caused by poisoning by mouldy maize.]**—*Rev. Milit. Remonta Vet.* **10,** 199-215. **1121**

A discursive paper describing a serious disease in a remount depot in São Paulo, suspected from the nervous symptoms, body posture and abnormal gait to be equine encephalomyelitis. Negative results from inoculation experiments however ruled out the virus form and suggested a toxic form.

Examination of maize consignments at the depot indicated that 50% of the grain was mouldy or unripe grain. This was fed to both g. pigs and horses but the disease was not induced in them, neither was a toxin or toxic chemical detected by biological tests of the maize. However, the fact that horses recovered when the mouldy maize was excluded from the ration, and that similar experience had been reported by others, were considered to point to mouldy maize as the causal factor.

—K. J. SINCLAIR.

EVANS, E. T. R., EVANS, W. C. & ROBERTS, H. E. (1951). **Studies on bracken [*Pteris aquilina*] poisoning in the horse.**—*Brit. vet. J.* **107,** 364-371; 399-411. [Authors' summary slightly amended.] **1122**

Typical "bracken staggers" in the horse has been reproduced experimentally by the feeding of a bracken and hay diet. Clinical records, haematological and biochemical observations made during the course of the work are recorded and discussed.

This condition in the horse exemplifies the symptoms which are characteristic of avitaminosis B_1. Clinically and pathologically cardiac involvement is prominent. The blood aneurin level is much depressed, and the pyruvic acid concentration is markedly increased, both being well-recognised biochemical lesions in aneurin deficiency. Aneurin therapy, if commenced before the condition is too far advanced, is successful in curing the animal.

The effect of feeding bracken to the horse seems to be similar to the action of this plant on the rat. Both phenomena are adequately explained by our previous finding that a thiaminase is present in the bracken, which by virtue of its property of splitting aneurin into its components denies this essential intact vitamin to the animal.

OSEBOLD, J. W. (1951). **An approach to the pathogenesis of fern poisoning in the bovine species.**—*J. Amer. vet. med. Ass.* **119,** 440-441. [Author's summary copied *verbatim.*] **1123**

The clinical picture and hematological changes of bracken fern [*Pteris aquilina*] poisoning in the bovine animal suggest aplastic anemia. Possible explanations for the occurrence of this syndrome following prolonged ingestion of fern are presented. Efforts by others to demonstrate alkaloids, phytotoxins, saponins, or glucosides have been unsuccessful.

FERRARI, L. (1951). Avvelenamento da elleboro verde in bovini maremmani bradi. **[*Helleborus viridis* poisoning in cattle.]**—*Zooprofilassi.* **6,** 316-320. **1124**

Symptoms (state of stupor) and P.M. findings are described at length in cattle having access to *Helleborus viridis* when drought had destroyed their normal pasturage. The active principles are two glucosides with high cardiac activity. Both are local irritants; one acts on the nervous system causing narcosis and anaesthesia; the other affects the mucosae and the circulation.—K. J. SINCLAIR.

CASSAMAGNAGHI, A. (1945-46). Accidentes de fotosensibilización de orígen alimenticio en los animales domésticos. **[Photosensitization of nutritional origin in domestic animals.]**—*Ann. Fac. Vet., Montevideo.* **4,** 541-549. **1125**

C. described a condition in fowls and ducks characterized by swelling and vesiculation of the comb, wattles, digits and interdigital spaces, and swelling of the eyelids sufficient to close the eyes and prevent the birds from feeding. Other parts of the body were sometimes affected when they were deprived of feathers during the moult.

Morbidity in the flocks was 100% and the mortality rate was about 10–20% in fowls and up to 100% in ducks. Transmission experiments to birds and animals proved negative and vitamin deficiency was not considered to be a likely cause. A complete change of diet was found to be beneficial to the birds and this led to the discovery that seeds of *Ammi visnaga* (Umbelliferae) in the diet were responsible for photosensitivity with resultant vesiculation when the birds were exposed to sunlight. Experimental birds fed on the seeds and kept in the dark failed to develop lesions, whereas birds exposed to sunlight developed the disease. White birds mainly were affected. Necrosis of the unpigmented ear of a g. pig was produced by feeding seeds of *A. visnaga* followed by exposure to sunlight.—I. W. Jennings.

See also absts. **1110** (experimental carbon tetrachloride poisoning in rats); **1134** (toxicity of penicillin for g. pigs).

PHARMACOLOGY AND GENERAL THERAPEUTICS

(For treatment of specific infections see under the appropriate disease)

Wagner-Jauregg, T. (1949). Therapeutische chemie. Arznei- und Desinfektionsmittel zur Bekämpfung von Infektionskrankheiten. **[Chemotherapy of infectious diseases.]** pp. 272. Berne: Hans Huber. Sw. fr. 35.50. **1126**

In this book, written in German, the author has arranged chemical compounds used in prophylaxis and in curative treatment of infectious diseases in three main sections: A. Those of an antiseptic nature; B. Those used in chemotherapy and C. Antibiotics. A brief description is given of each substance or group of substances mentioned, including chemical and structural formulae.

The book was written for medical men, pharmaceutical chemists and bacteriologists; reference to any specific substance is readily made as there is a good list of contents and there are subject and author indexes.—E.M.J.

Russ, S. [Prof. Emeritus Middlesex Hospital.], Clark, L. H. [F.Inst.P., Physicist, Hammersmith & Lambeth Hospitals] & Pelc, S. R. [Physicist. Medical Research Council, Medical Therapeutic Research Unit.] (1950). **Physics in medical radiology.** pp. viii + 296. London: Chapman & Hall Ltd. 2nd Edit. revised. 25s. **1127**

This book is intended to meet the needs of those seeking to keep pace with physical and technical developments in medical radiology.

The book is divided into two parts. The first, of 158 pages, deals with the elementary physical background of radiology. Chapters on the measurement of X-ray intensity and on dosage in radium and radon therapy are included. This first part might have been of greater value if less space had been devoted to textbook matter.

The second and more valuable part covers 114 pages. The chapters on photography, X-ray exposures and tracer techniques are well presented. The concluding four chapters discuss the principles of operation of electrical machines and include a very brief discussion of modern high-voltage machines. The book closes with an appendix on X-ray and radium protection and a list of works of reference. Very few specific references are included in the text.

In conclusion it may be stated that the book is suitable for the student and non-specialized reader. The medical radiologist may find here much of interest but must undertake a more detailed further study of certain aspects.
—C. J. Bradish.

Carmichael, J. (1951). **The antihistaminics and their use in veterinary medicine.**—*Vet. Rec.* **63**, 220-222. **1128**

The history and action of histamine and antihistaminics are discussed, and also the toxic and side effects of the antihistaminics in man and animals and the uses particularly of anthisan and phenergan in veterinary medicine. Treatment is worth while in any cases of a probable allergic nature. C. gives an account of conditions in domestic animals in which these two drugs were used effectively.
—John Seamer.

Freeman, M. V., Draize, J. H. & Alvarez, E. (1951). **Cutaneous absorption of phenol.**—*J. Lab. clin. Med.* **38**, 262-266. [Authors' conclusions copied *verbatim*.] **1129**

Phenol is rapidly absorbed and excreted following topical application. A single application of a 2·3% phenol in corn oil mixture does not appear to affect the skin's ability to absorb phenol.

Animals whose skin was irradiated with ultraviolet rays to a point of erythema and slight edema formation exhibited a retarded excretion of phenol. In the phenol-camphor and phenol-corn oil mixtures studied, urinary phenol values were in direct ratio to the phenol content of the respective mixtures.

After treatment, animals with severely burned skin exhibited much higher values of urinary phenol than animals with intact skin, indicating a potential danger in the indiscriminate use of phenol compresses in severe burns.

KRISTENSON, A. (1951). **The effects of chemotherapeutics and antibiotics on the coagulation of the blood.**—*Acta tuberc. scand.* **25,** 182-189. [In English. Author's summary copied *verbatim.*] **1130**

Some investigations point to the possibility of increasing the coagulation time in man by the intake of para-amino-salicylic acid. Employing a new method for determining the coagulation time of whole blood, the author has shown that there is no obvious influence on the coagulation of the blood from para-amino-salicylic acid, "conteben", streptomycin and penicillin.

MASSART, L. (1951). Oppervlaktespanning en anti-bacteriele werking. **[The relation between surface tension and antibacterial activity.]**—*Vlaam. Diergeneesk. Tijdschr.* **20,** 145-154. [English, French and German summaries.] **1131**

A discussion of literature about surface tension and antibacterial activity. Mention is made in this connexion of the action of cetavlon (hexadecyltrimethyl ammonium bromide) on yeasts.—C. A. VAN DORSSEN.

BARON, A. L. (1950). **Handbook of antibiotics.** pp. viii + 303. New York: Reinhold Publishing Corporation. $6.50. **1132**

In compiling this valuable manual the author has presented an abstract of the literature on antibiotics up to about August 1949, including mention of a few appearing in print early in 1950. Of some 141, in alphabetical sequence, each is described under such headings as production, chemistry, bacteriology, pharmacology and bibliography, a factual outline being given, including the basic facts of tables and statistical summaries.

The book concludes with a useful glossary of terms used in the text; a list of antibiotic-producing organisms, given in alphabetical order regardless of whether they are bacterial, fungous, or higher plant species, each with the corresponding antibiotic(s) formed; an author index and an index of organisms.

For ready reference to a specific aspect of an antibiotic the book will be a very great help to all interested in this type of work.—E.M.J.

JENSEN, K. A., DRAGSTED, P. J., KIAER, I., NIELSEN, E. J. & FREDERIKSEN, E. (1951). **Leocillin (benzyl penicill n-β-diethylaminoethylester hydriodide).**—*Acta path. microbiol. scand.* **28,** 407-414. **1133**

G. pigs injected with leocillin had a concentration in the lungs five times as high compared with injections of sodium penicillin: the blood content of the former was lower. In human beings, the blood concentration was lower with leocillin than with procaine penicillin. Comparing leocillin and penicillin: the former gave a higher concentration in the lung in human beings and in the sputum.

—S. E. FOX.

GERNEZ-RIEUX, C. & BÉERENS, H. (1949). Toxicité de la pénicilline pour le cobaye. **[Toxicity of penicillin to g. pigs.]**—*Ann. Inst. Pasteur, Lille.* **2,** 100-107. **1134**

Penicillin sodium was toxic to 38 of 59 g. pigs, death occurring at variable periods. The nature of this toxic action is obscure, but it is unrelated to the number of injections given, the volume of solution, the number of units of penicillin administered, and the proprietary brand of the drug.—W. R. BETT.

STOLL, A., BRACK, A. & RENZ, J. (1951). Nocardamin, ein neues Antibioticum aus einer Nocardia-Art. **[Nocardamine a new antibiotic derived from *Nocardia*.]**—*Schweiz. Z. Path. Bakt.* **14,** 225-233. [English, French and Italian summaries. Abst. from English summary.] **1135**

An antibiotic substance, nocardamine, active against mycobacteria, was isolated in crystalline form from the liquid medium in which a species of *Nocardia* was grown, and its bacteriostatic effect on tubercle bacilli was tested. Its chemical composition corresponded to the formula $C_9\ H_{14}\ O_3\ N_2$.

RITCHIE, A. C., SMITH, N. & FLOREY, H. W. (1951). **Some biological properties of cephalosporin P_1.**—*Brit. J. Pharmacol.* **6,** 430-444. [Abst. from authors' summary.] **1136**

In vitro cephalosporin P_1 [an antibiotic from a sp. of *Cephalosporium*] inhibits the growth of staphylococci, corynebacteria and *Clostridium tetani* at considerable dilution. It

has little effect on streptococci, Gram-negative organisms, or tubercle bacilli. Penicillin-resistant staphylococci are sensitive to the drug; serum reduces but does not abolish its action. By suitable repeated culture staphylococci are easily made resistant to its action *in vitro*. In concentrations of more than 1:200,000 cephalosporin P_1 is bactericidal. It is more active against the staphylococcus than helvolic acid, and has the same order of activity as aureomycin and terramycin.

Given intravenously, cephalosporin P_1 is less toxic than aureomycin or terramycin, the LD50 for 20 g. mice being between 500 and 750 mg./kg. No gross or microscopic lesions were found P.M. in mice given 5 mg. *per os* at 12-hourly intervals for $5\frac{1}{2}$ days.

In mice the drug has some protective action against staphylococcal infections, but is less effective than either aureomycin or terramycin.

No evidence is available to explain this lack of antistaphylococcal activity *in vivo* compared with the high activity *in vitro*.

WARE, G. C. (1951). **Potentiation of the antibacterial activity of sulphathiazole by glutamine.**—*Lancet*. **261**, 865-867. [Author's summary copied *verbatim*.] **1137**

Glutamine potentiates the bacteriofrenic action of sulphathiazole, rendering it bactericidal against *Bact. coli* growing in a synthetic medium. This activity is reduced on heating.

JANSZEN, H. (1951). **The effect of benemid [*p*-(di-n-propylsulfamyl)-benzoic acid] on blood levels of PAS.**—*J. Lab. clin. Med.* **38**, 227-233. [Author's conclusions slightly modified.] **1138**

Benemid substantially elevates blood free PAS levels, the increase being most remarkable several hours after the last oral dose of PAS; but it rarely produces a fasting blood PAS level of 1 mg. % under conditions of this experiment. Benemid causes a greater percentage increase in blood, free aryl amines in patients receiving 6 g. of PAS daily than in those receiving 12 g. Benemid causes an increase in the relative and actual amounts of acetylated amine in the blood. A higher percentage of patients develops symptoms of toxicity, chiefly gastrointestinal, on a combination of PAS and Benemid than on PAS alone; but Benemid in dosages of 2 or 4 g. daily produces no symptoms when given alone, *i.e.*, without PAS. Manipulation of the form and frequency of the PAS dose should not be neglected as a means of maintaining desired blood PAS levels. The routine use of Benemid with PAS cannot be recommended from this data although its value is highly suggestive.

WINTER, C. A. & FLATAKER, L. (1951). **The effect of cortisone, desoxycorticosterone [D.C.A.], and adrenocorticotrophic hormone [A.C.T.H.] upon the responses of animals to analgesic drugs.**—*J. Pharmacol.* **103**, 93-105. [Authors' summary modified.] **1139**

Cortisone, A.C.T.H. and D.C.A. were without effect upon the reaction time of the tail-flick response to thermal stimuli in normal rats. Cortisone and A.C.T.H., however, markedly reduced the effect of morphine or methadone [dimethylamino - 4, 4 - diphenylheptanone - 5 - hydrochloride] upon this reaction, while D.C.A. enhanced it. Cortisone proved to have a synergistic action with the analgesic antagonist, N-allylnormorphine. The steroid reduced the threshold for effectiveness of the antagonist. Cortisone provided partial protection in mice against toxic doses of methadone. It increased voluntary activity of normal mice, but reduced the hyperactivity of morphinized mice. It increased the excitatory effect of morphine in cats. Spinal cord section was shown to reduce the reaction time of the tail-flick response in rats when submaximal stimuli were employed. Cortisone and A.C.T.H. reduced the effect of morphine on the spinal reflex, while D.C.A. enhanced it.

MOON, G. J. H. (1951). **Anaesthesia.**—*Aust. vet. J.* **27**, 119-123. Discussion 124-125. **1140**

M. discussed his experiences with commonly used anaesthetics for animals in New Zealand. The inclusion of 2·5% W/V of thialbarbitone ("Kemithal") with β-naphthoxyethanol ("Anavenol") gave more satisfactory anaesthesia in cattle than the latter alone. Nembutal anaesthesia in small animals must be used cautiously in toxic subjects. The intravenous route is preferred. The use of nerve blocking for local anaesthesia was discussed. Paravertebral block has sometimes been ineffective. Experience with epidural anaesthesia seemed to indicate that the doses commonly recommended are not always reliable.—J. M. KEEP.

JUNGHERR, E. (1950). **Studies on sanitizing used feed bags.**—*J. Amer. vet. med. Ass.* **117**, 324-328. **1141**

Details are given of experiments to discover a practical and effective method of sterilizing feed bags in bulk. Strips of coarse jute fabric were contaminated with viruses, bacterial organisms and spore-forming bacilli. They were then severally sterilized by means of cyanide fumigation, exposure to ultra-violet rays, im-

pregnation with a mercury compound and dielectric heat treatment. Details are given of the experimental methods and results. While the dielectric treatment was the most effective, destroying *Salmonella pullorum* when maintained at 197°–205°F. for seven min., it failed to destroy spores of aerobic bacilli. These spores also survived dielectric heating of up to 280°F., maintained for up to nine min.

—John C. Cowne.

See also absts. **904** (staphylococci and antibiotics); **908** (influence of penicillin on *B. anthracis*); **913** and **914** (A.C.T.H. in experimental TB.); **921** (penicillin treatment of swine erysipelas); **922** (bee venom in *E. rhusiopathiae* infection); **944** and **947** (antibiotics in brucellosis); **956** (treatment of *A. lignièresi* infection); **958** (antibiotics); **959** (bactericidal action of ultrasonic waves); **965** (failure of cortisone and A.C.T.H. in experimental trypanosomiasis); **967** (trichomoniasis); **969-972** (coccidiosis); **978** (aureomycin and F. & M. disease virus); **979** (effect of ultrasonic waves on viruses); **993** (Borna disease); **1031** and **1043** (A.C.T.H.); **1041** (cortisone and anaphylaxis); **1052-1054, 1117** and **1118** (D.D.T.); **1057** (demodectic mange); **1063** (benzene hexachloride against kidney worm larvae); **1065** (anthelmintic); **1069** (verminous bronchitis); **1072** (hormone treatment of *A. galli* infestation); **1078** (cortisone and tumours); **1114** (adrenalin and noradrenalin); **1168** (penicillin); **1199** (thyroxin in male infertility); **1212** (phenothiazine as a growth stimulant for sheep); **1234** (book, phamaceutical chemistry).

PHYSIOLOGY, ANATOMY AND BIOCHEMISTRY

Lee, D. H. K. [Professor of Physiological Climatology, The Johns Hopkins University, Baltimore, Maryland.] (1950). **The physiology of tissues and organs. An introduction to the study of systematic physiology.** pp. viii + 159. Springfield, Ill.: Charles C. Thomas. $4.00. Oxford: Blackwell Scientific Publications. 30s. **1142**

The student's approach to physiology is usually by way of the study of systematic textbooks on the subject, supplemented by lectures and practical classes. The drawback to such a proceeding is that all too often the student is expected to assimilate complex physiological ideas before he has obtained a grounding in the fundamentals of the subject. The consequence is that interest wanes and the course in physiology is merely regarded as being an obstacle placed in the way before the path is open to clinical studies; without a sound knowledge of the fundamentals of physiology, the clinician is greatly handicapped.

In an attempt to overcome these difficulties, the author provides in this book an outline of the fundamentals of physiology which is intended to form the basis for a preliminary course of lectures in preparation for systematic physiology.

The book is divided into two main sections; the first deals with the physiology of tissues, such questions as the chemical and physical factors concerned in living processes being considered; the second deals with the physiology of organs. Here a departure has been made from the orthodox treatment, the organs being grouped together according to their functions as absorptive organs, *e.g.* alimentary canal, lungs, skin etc.; storage organs, *e.g.* liver, muscle, bone and so forth. This perhaps gives rise to certain difficulties with organs having more than one function, but on the whole a straightforward account is presented without undue repetition.

A preliminary course of lectures before embarking on a course of systematic physiology is highly to be recommended, but whether it is possible in a crowded curriculum is another matter. There is no doubt, however, that all students of physiology will find this book a most useful adjunct to the larger works on the subject.—J. A. Nicholson.

Anon. (1950). **The growth of the wool fibre.**—*Wool. Sci. Rev.* September, No. 6. pp. 13-20. **1143**

This is a general account of the development of the wool fibre in the skin of sheep and of the biological structure of the mature fibre. Photomicrographs of eight sections are given.

—E.M.J.

Kurnick, N. B. (1951). **Cytochemical studies on the kidney. I. Role of cell multiplication in normal growth.**—*J. exp. Med.* **94,** 373-376. [Author's summary copied *verbatim.*] **1144**

Determinations of the desoxyribonucleic acid (DNA) content of the kidneys of growing rats were made on the whole tissues and on isolated nuclei. It was found that the DNA content per nucleus is constant in rats of different weights. The DNA content of the kidneys increased proportionately to their mass over the range studied. It is concluded that increase in mass is primarily due to cell multiplication.

Vanamee, P. & Porter, K. R. (1951). **Observations with the electron microscope on the solvation and reconstitution of collagen.**—*J. exp. Med.* **94,** 255-268. [Authors' summary slightly modified.] **1145**

The course of events in the solvation and reconstitution of collagen obtained from rat tail tendon is described as seen with the electron microscope. Under the influence of 0·01% acetic acid the collagen fibres swell and dissociate into submiscroscopic filaments, the smallest of which are probably beyond the resolution of

the electron miscroscope. These filaments can be made to reconstitute into fibres either by the addition of neutral salts to the acid solution or by raising the pH. The structural form of the resulting fibres is influenced by the concentration of the salt and by the pH of the solution employed. Saline concentrations around 1% and at pH ranging from 4·8 to 6·8 lead to the formation of needle-shaped crystals, or tactoids, showing the striated structure characteristic of collagen. Saline concentrations outside of this range (0·5% and 5·0%) lead to the formation of long fibrils without evidence of striations. Increase of pH above 6·8 brings about the formation of long slender fibres. Some of the possible reasons for these different fibre forms are discussed.

Apparently fibres are formed *in vitro* by the lateral and longitudinal association of the filaments seen in the original solutions. Some of the fibres thus formed may in turn associate laterally and longitudinally to form the larger fibres.

The formation of the needle-shaped crystals appears to be an orderly process since it leads to the formation of a periodicity in the fibres. The striations in the smaller fibres are uniform and regularly spaced at around 210 A. With continued growth of these fibres there is a simultaneous development of a more obvious and precise banding. It is evident that two out of each group of three regularly spaced striae are more prominent. This produces the macroperiod of collagen measuring around 640 A in length.

Fox, T. W. (1951). **Studies on heat tolerance in the domestic fowl.**—*Poult. Sci.* **30**, 477-483. **1146**

In an environment at 108° ± 5°F., without access to water, White Plymouth Rock and Rhode Island Red fowls survived longer than single comb White Leghorns. When water was available the single comb White Leghorns had more inclination to drink at high temperatures, and survived longer.—N. Dean.

Wilson, W. O. & Plaister, T. H. (1951). **Skin and feather temperatures of hens kept at constant environmental temperatures.**—*Amer. J. Physiol.* **166**, 572-577. [Authors' summary copied *verbatim*.] **1147**

Skin and feather temperatures were taken with a touch thermocouple and a Hardy dermal radiometer in White Leghorns and New Hampshires at four different environmental temperatures: 74°, 80°, 86° and 90°F.

Body temperature as well as skin temperatures varied within the range studied. Highest skin temperature occurred on the femur and breast, while the temperature of the comb, wattle, and shank (anterior) was lower and varied more with environmental temperature. Gradients existing in skin temperature may be related to location on the bird and air temperature. A negative correlation between temperature of either comb or shanks and body temperature demonstrates that they act as heat-loss mechanisms.

The touch thermocouple was found to give more consistent results for measuring skin temperature than the radiometer. No consistent breed difference was observed by either method. The correlation between the skin temperature of the exterior of the femur and body temperature was + 0·73. The feather temperature as measured by the radiometer rapidly approached air temperature as the latter increased from 74° to 90°F.

Folley, S. J. & French, T. H. (1950). **The intermediary metabolism of the mammary gland. 3. Acetate metabolism of lactating mammary gland slices with special reference to milk fat synthesis.**—*Biochem. J.* **46**, 465-473. **1148**

Tissue respiration experiments indicated that the mammary-gland slices from ruminants (sheep, cow and goat) could utilize acetate *in vitro* with R.Q. [respiratory quotient] greater than 1, whereas they were almost inert towards glucose. The addition of glucose, however, stimulated the acetate utilization of mammary slices from rats, rabbits and sheep. The results were considered to indicate that the mammary gland can utilize acetate for the synthesis of milk fat. It is not suggested, however, that the whole of the milk fat is synthesized in the mammary gland from acetate or carbohydrate.
—A. T. Cowie.

Whittleston, W. G. (1951). **Studies on milk ejection in the dairy cow. The effect of stimulus on the release of the "milk ejection" hormone.**—*N.Z. J. Sci. Tech.* Sect. A. **32**, No. 5. pp. 1-20. [Author's summary copied *verbatim*.] **1149**

Experiments are described which demonstrate that a cow is able to respond to a stimulus applied after milking by secreting a second lot of "milk let-down" hormone. Milking two quarters at a time by machine, the normal decline in yield of the second pair was shown to be arrested by a second stimulus prior to the second milking. Milking four quarters at a time and using a double machine milking procedure the first ejection curve was shown to be inhibited in proportion to the level of electric

shock applied to the cow before milking while the second milking curve tended to normality as the first milking was increasingly inhibited. The effects due to varying the time at which the cow is shocked suggest that the inhibition is mainly due to the conditioned reflex component of the mechanism.

The behaviour of the cow, which under field conditions yields a considerable amount of her milk to hand stripping following machine milking, is explained in terms of a conditioned double secretion of milk let-down hormone.

RODBARD, S. (1951). **A model demonstrating normal and abnormal cardiovascular dynamics.**—*J. Lab. clin. Med.* **38,** 267-274. [Author's summary copied *verbatim.*] **1150**

A model of the circulation which illustrates normal and abnormal cardiovascular hydrodynamics has been designed and used with success in the teaching of hemodynamics. Pressure pulses in any part of the circulation in a large variety of conditions may be demonstrated.

LUYET, B. J. (1949). **Effects of ultra-rapid freezing on mammalian erythrocytes.**—*Biol. Bull., Woods Hole.* **97,** 269. [Abst. in *Excerpta med.* Sect. I. **4,** 358. (1950), slightly modified.] **1151**

Smears of oxalated ox blood, in layers about 60 μ thick, are cooled at a rate of 100°C. per sec. by immersion in liquid nitrogen and re-warmed at the same velocity by immersion in physiological saline at room temperature. This treatment gives very little haemolysis.

TAGER, M. & LODGE, A. L. (1951). **Influence of the physiological blood clotting process on the coagulation of blood by staphylocoagulase.**—*J. exp. Med.* **94,** 73-85. [Authors' summary copied *verbatim.*] **1152**

The conversion of plasma to serum results in a variable loss of the coagulase-reacting factor (C.R.F.) of the plasma.

The C.R.F. loss is incurred during the process of prothrombin conversion: conditions which favor the most effective prothrombin conversion result in maximal C.R.F. loss while factors which interfere with prothrombin conversion spare the C.R.F.

In a system containing an adequate concentration of calcium, thromboplastin, and prothrombin, the C.R.F. loss reflects the amount of prothrombin conversion-accelerating substances (factor V or AC globulin). If fibrin clots are produced directly by thrombin, and prothrombin conversion is excluded, there is no significant C.R.F. loss.

HANSARD, S. L., SAUBERLICH, H. E. & COMAR, C. L. (1951). **Blood volume of swine.**—*Proc. Soc. exp. Biol., N.Y.* **78,** 544-545. [Authors' summary modified.] **1153**

The P^{32} labelled red blood cell method was satisfactory for the determination of blood volumes in swine. Values obtained ranged in regular fashion from 7·4 to 4·6 ml. per 100 g. body weight for 10 to 344 lb. animals, respectively.

OSHKADEROV, V. I. (1949). **Lymphatic vessels of long bones in man and domestic animals.**—*Khirurgiya.* No. 12. pp. 49-54. [Abst. from abst. in *Excerpta med.* Sect. I. **4,** 403. (1950).] **1154**

The author presented the results of the examination of the lymphatic system of the long bones of 17 dogs. The tibia was exposed by a small transverse incision, curetted and the bone cavity washed with saline and plugged with sterile gauze. A sterile dressing was applied and the leg splinted. After 4 to 6 days the plug was removed, the granulating cavity filled with 50% solution of "collargol" or with the dialysate of Indian ink and closed hermetically. The animals that received Indian ink were killed on the 3rd, 6th, 16th, 18th, 23rd or 24th day, and the injected legs dissected and examined microscopically. The legs treated with collargol were examined radiologically every two hours. The lymphatic vessels in the bone resembled tiny chains. They ran towards the Haversian canals and then along the nutrient vessels to the periosteum. Under the periosteum they formed plexuses which joined larger lymphatics running to the lymph nodes.

COMLINE, R. S. & TITCHEN, D. A. (1951). **Reflex contraction of the oesophageal groove in young ruminants.**—*J. Physiol.* **115,** 210-226. [Author's summary copied *verbatim.*] **1155**

The reflex nature of the oesophageal groove contraction has been examined in decerebrate preparations of young ruminants. The reflex arc and the factors which affect it have been studied in detail in young calves up to 14 days old.

The superior laryngeal was the only afferent nerve which, on stimulation, consistently produced a reflex contraction. The entry of water into the posterior part of the mouth was a more effective stimulus to reflex contraction than stimulation of this nerve. The efferent fibres were confined largely to the dorsal abdominal vagus nerve.

The reflex contraction of the oesophageal groove was associated with swallowing but occurred after the bucco-pharyngeal move-

ments had been abolished by section of the appropriate nerves.

Stimulation of the central end of the glossal branch of the glosso-pharyngeal nerve inhibited swallowing, respiration and the reflex contraction of the oesophageal groove. Both swallowing and groove contraction rapidly recovered on cessation of the stimulus.

Stimulation of the central end of the abomasal nerve inhibited reflex groove contraction but not swallowing or respiration. The inhibition was slow in onset and remained after bilateral section of the splanchnic nerves.

The inhibition which followed splanchnic stimulation was also slow in onset and progressively diminished with continued stimulation. The duration of the inhibition was increased in older animals. No evidence was found for the presence of a sympathetic innervation directly inhibitory to the groove musculature.

Contraction of the groove as a result of reflex excitation or direct stimulation of the dorsal vagus nerve was abolished by small doses of atropine. Reflex contraction was inhibited by the intravenous injection of adrenaline and noradrenaline.

HILL, K. J. & GREGORY, R. A. (1951). **The preparation of gastric pouches in the ruminant.**—*Vet. Rec.* **63,** 647-652. [Authors' summary copied *verbatim.*] **1156**

Six different techniques for preparing innervated and denervated abomasal pouches in the goat are described.

Details of anaesthesia, post-operative care, type of cannula used and the difficulties encountered in the preparation of abomasal pouches are also provided.

GRANADOS, H., GLAVIND, J. & DAM, H. (1951). **On the growth-promoting action of an extract of cow's salivary glands.**—*Acta path, microbiol. scand.* **29,** 225-228. [In English. Authors' summary modified.] **1157**

An experiment was carried out to compare the possible growth-promoting action of an aqueous extract of cow's salivary with the effect of a similar extract of a non-glandular tissue, namely, skeletal muscle (pectoralis major) obtained from the same animals. Three groups of weanling hamsters were reared for 12 weeks on a purified diet. Group 1 received distilled water to drink, group 2 the extract of salivary glands, and group 3 the muscle extract.

The results showed that both extracts increased the growth of the animals to the same extent. Therefore it has been concluded that the extract of salivary glands did not exhibit any effect which could be attributed to a specific growth-promoting factor present in the salivary glands' extract. The results have been briefly discussed.

NICHOLS, R. E. (1951). **A note on eructation in sheep as related to rumen fluid level and gas insufflation.**—*Amer. J. vet. Res.* **12,** 199-200. **1158**

Increased belching is produced by insufflation of the rumen with gas, but overloading of the rumen with water followed by insufflation with gas inhibits belching, and death follows quickly.—G. B. S. HEATH.

HARRIS, G. W. (1951). **Neural control of the pituitary gland. I. The neurohypophysis.**—*Brit. med. J.* Sept. 8th, 559-564. [Part of author's conclusions copied *verbatim.*] **1159**

Present views with regard to nervous control of the neurohypophysis may be summarized as follows. Excitation of the gland with release of the antidiuretic hormone follows emotional stress in the normal animal and the intracarotid injection of hypertonic sodium chloride solution; both responses are mediated by the supra-optico-hypophysial tract. Some, at least, of the afferent nervous pathways to the supraoptic nuclei are cholinergic in nature.

Electrical stimulation of the supraoptico-hypophysial tract causes liberation of the antidiuretic and oxytocic substances(s) into the blood, with the following results—inhibition of a water diuresis; increase in the relative, and sometimes absolute, urinary chloride; a marked increase in uterine activity in the oestrous or oestrogenized rabbit, but no increase in the pseudopregnant animal or animal treated with progesterone; an increase in intestinal activity; the appearance of an antidiuretic substance in the urine; and the ejection of milk from the cannulated lactiferous duct of a lactating mammary gland.

It is possible that reflex stimulation of the neuro-hypophysis follows coitus, and that the resultant increased uterine activity is one factor in the transport of spermatozoa in the female genital tract.

Much evidence now exists that the transfer of milk from a lactating animal to her young is effected by a nervous reflex excitation of the neurohypophysis. The secretion of posterior pituitary hormone causes contraction of some element in the mammary gland and thus a positive ejection of milk from the mother to her suckling young. This milk-ejection response appears to be a function of the oxytocic substance of the neurohypophysis, and the reaction seems to offer a new technique by which the problem of the number of hormones liberated

from the neurohypophysis into the blood may be investigated.

BRAUN, A. (1950). Der segmentale Feinbau des Rückenmarks des Pferdes. **[Histology of the spinal cord in the horse.]**—*Inaug. Diss., Zürich.* pp. 76. **1160**

B. gave a comprehensive topographical account of the micro-anatomy of the spinal cord of the horse. The cord of two animals, a 14 year old and a 7 year old, was examined microscopically at each intervertebral level, that of four others only macroscopically.

Information was given on the relative proportions of grey and white matter at all levels (illustrated also by a novel graph) on the extent of the commissure, the size of the horns and the nature of Clark's column. The central canal of the cord received special attention; it was found to extend to the filum terminale. Line drawings at segmental levels clarify the script.—C. W. OTTAWAY.

OKUDA, S. (1949). **[Absence of a direct nervous connexion between the vagal nerves and suprarenal glands in dogs.]**—*Tohoku med. J.* **50,** 363-364. [Abst. in *Excerpta Med.* Sect. 1. **4,** 307. (1950), copied *verbatim.*] **1161**

Dissections of vagus nerves in three dogs yielded no evidence of direct connections between vagi and suprarenal glands.

MADEIRA, A. C. (1948). Sur une substance fuchsinophile dans les cellules des glandes parathyroïdes et sa signification sécrétoire. **[A fuchsinophile substance in the parathyroid cells and its significance for secretion.]**—*Arch. portug. Sci. biol.* **9,** 159-163. [Abst. from abst. in *Excerpta med.* Sect. I. **4,** 321. (1950).] **1162**

Fuchsinophile granules can be demonstrated in the cells of the parathyroid gland of the dog and cat by fixing in Regaud's or Helly's liquid, chromatization of the pieces and staining by Crossman's method. The fuchsinophile substance seems to dissolve and to pass the cell membrane and is abundant in the parathyroid of new-born animals and of pregnant females.

BONFANTI, C. (1949). Sulla struttura del muscolo ciliare del maiale. **[The structure of the musculus ciliaris in the pig.]**—*Estr. Ateneo., Parma.* **20,** 8 pp. [Abst. in *Excerpta Med.* Sect. I. **4,** 238. (1950), slightly modified.] **1163**

In the musculus ciliaris of the pig, the smooth muscular fibro-cells have either a longitudinal, oblique or circular direction. The circular elements appear, however, in a different position from that of the muscle of Rouget-Mueller in man. Some anatomical peculiarities of the muscle lead the author to advance the hypothesis that the ciliary muscle has a part in the stimulation and regulation of the ciliary-iris blood circulation as well as in the circulation of endocular liquids, and consequently in the regulation of ocular tension.

HAZELHOFF, E. H. (1951). **Structure and function of the lung of birds.**—*Poult. Sci.* **30,** 3-10. **1164**

The anatomy and function of the avian lung is described briefly and reference is made to relevant literature. Experimental evidence is given that the air current in the parabronchi flows in the same direction during inspiration and expiration. The current is maintained mainly by the action of the posterior air sacs. No valves or sphincters are found. This constant air flow can be explained by the laws of aerodynamics.—D. LUKE.

GARKAVI, O. V. & ALTMAN, A. D. (1950). **[Biochemical properties of the blood of lactating cows.]**—*Sovetsk. Zootekhn.* **5,** 15-30. [Abst. in *Dairy Sci. Abstr.* **13,** 302-303. (1951), copied *verbatim.* Signed: F.L.] **1165**

The composition of arterial and venous blood (from the milk veins) in relationship to milk synthesis was studied in these experiments. In a 6-month period, high-fat yielding cows averaged 74·1 and 61·3 mg. per cent. sugar and 406·5 and 395·4 mg. per cent. fat in arterial and venous blood. The corresponding values were 70·0 and 60·6 mg. and 420·6 and 410·6 mg. per cent. for cows in the low-fat group (butterfat 0·8 per cent. lower). In one experiment the sugar and fat levels in the arterial blood increased from 67 and 303 mg. to 78 and 323 mg. per cent. respectively with the decline in milk yield from 15·7 to 8·4 kg. Results of other analyses are tabulated and correlated with milk and butterfat yields. The author points out the individual differences in blood composition and the ability of the mammary gland to synthesize fat from both fat and sugar in the blood.

Changes in blood composition at different intervals between two consecutive milkings were investigated in 2 cows. Whilst sugar in arterial blood was fairly constant, its content in venous blood was lowest immediately after milking (43 and 47 mg. per cent.) and remained at a low level for about 5 hr.; it then increased to 52 and 63 mg. per cent. before the next milking. A similar trend was observed in the fat content. The absorption of sugar and fat (difference between the values in arterial and venous bloods) was highest in the first 2–3 hr. after milking, 21–22 and 13·8–17·3 mg. per cent., and then

decreased rapidly to 7–13 and 1·5–3·5 mg. per cent. immediately before the following milking.

The removal of about 20 per cent. of the total blood at 20-day intervals did not significantly affect the milk yield of cows or the fat content, but caused a temporary decline in the haemoglobin and erythrocytes in arterial blood.

PALADE, G. E. (1951). **Intracellular localization of acid phosphatase. A comparative study of biochemical and histochemical methods.**—*J. exp. Med.* **94,** 535-548. [Author's summary copied *verbatim.*] **1166**

The acid phosphatase activity of rat liver homogenates and of nuclear and cytoplasmic fractions isolated therefrom (by differential centrifugation) was determined biochemically in a series of experiments. For each liver, Gomori's histochemical test for acid phosphatase was run in parallel.

No correlation was found between the biochemical and the histochemical results. According to the former, the enzyme appears to be almost entirely (95 per cent) located in the cytoplasm, while according to the latter, the acid phosphatase is predominantly concentrated in the nuclei and in some peribiliary polymorphic structures identified as myelin figures.

It was found that the precipitation pattern obtained in the histochemical test does not reveal, as generally assumed, differences in enzyme concentration among the various cell structures, but actually reveals differences in their lead phosphate affinity. The usefulness of the histochemical test for intracellular localization studies was found to be further limited by considerable fixation damage and formation of myelin figure artifacts.

The biochemical approach is to be preferred because of better preservation of the material and direct and more reliable methods for the demonstration of enzyme activity.

RANDALL, J. T. (1951). **An experiment in biophysics.**—*Proc. roy. Soc.* Ser. B. **138,** 301-324. **1167**

R. discussed the nature and scope of this study and the necessary apparatus including reflecting microscopes with spherical mirrors and microspectrographic equipment. He dealt with the physical properties of some biological systems (1) physical studies of catalase, (2) crystals of the nucleoprotein of tobacco mosaic virus, (3) nucleic acid. He discussed the cell nucleus, nucleic acid content of nuclei, the structure of nuclear membranes and the microstructure of spermatozoa. There are many diagrams and photographs.—E.M.J.

See also abst. **1083** (effect of salt intake on physiology of ruminants).

PUBLIC HEALTH VETERINARY SERVICES AND VETERINARY EDUCATION

BRØGGLER, H., JUNCHER, H. O. & MAGNUSSON, I. (1951). Nogle undersøgelser over anvendeligheden af penicillinholdig maelk. [**Attempts to render milk from penicillin treated cows usable.**]—*Maanedsskr. Dyrlaeg.* **62,** 217-223. **1168**

Milk from herds which are being extensively treated with penicillin should be clearly marked so that the dairies will know how to deal with it.

The authors determined the penicillin content of such categories of milk and added the corresponding number of units of penicillinase. Such milk so treated made excellent butter, but the cost of production would be prohibitive.

Short heat treatment of milk containing penicillin did not destroy the penicillin content. Attempts to wash out the penicillin failed.

—F.E.W.

MEARA, P. J. (1951). **Cream smear examination of bulked herd milk supplies for mastitis contamination.**—*J. S. Afr. vet. med. Ass.* **22,** 49-50. [Author's summary modified.] **1169**

Microscopic examination of milk smears made from 281 herd milk samples revealed mastitis streptococci in 6% of smears, whereas they were present in 25% of smears from gravity cream from the same milk samples.

HOWE, P. E. (1950). **Foods of animal origin.**—*J. Amer. med. Ass.* **143,** 1337-1342. **1170**

Lean meat protein tends to be deficient in sulphur-containing amino acids; egg protein is a complete source of amino acids; any supplementary amino acids should be given together with a meal and not after an interval of time. There is considerable variation between the fat contents of the lean portion of meat from different animals and in the various cuts. Fats of animal origin leave little to be desired as regards essential fatty acids or digestibility. Foodstuffs of animal origin are good sources of vitamins A and D and the B complex; the amounts vary with the state and manner of nutrition of the animal concerned. Most animal foodstuffs are good sources of phosphorus; milk products are particularly rich in calcium, and meat and eggs supply valuable quantities of iron. Frozen foods retain their nutritive value; methods involving the use of heat in preservation and preparation of food result in some loss

of nutritive value but not sufficient to be of importance in diets under normal conditions.
—R. MARSHALL.

ANON. (1951). **Food poisoning in England and Wales, 1950.**—*Mon. Bull. Minist. Hlth publ. Hlth Lab. Serv.* **10,** 228-239. [Summary slightly modified.] **1171**

In 1950 the number of food-poisoning incidents reported by medical officers of health to the Ministry of Health and by bacteriologists to the Medical Research Council increased by 64%. Of the 3,979 incidents reported, 2,987 were sporadic cases, and 992 were outbreaks and family outbreaks.

Salmonella were the cause of 2,021 incidents, of which 1,554 were sporadic cases and 467 were outbreaks. Staphylococci caused 82 incidents, 15 of which were sporadic cases. *Cl. welchii* caused 24 outbreaks, and other organisms 40 outbreaks and 3 sporadic cases. Two outbreaks were due to chemicals, and 1,807 incidents, of which 392 were outbreaks, were due to unknown causes.

The highest number of incidents occurred in the third quarter, and the lowest number in the first quarter of the year.

The food known or believed to have been associated with the infections was mentioned in the reports of 435 outbreaks and family outbreaks; 268 of these were meat dishes—210 being processed, made-up, or reheated meat, soup or stock. *Forty-eight per cent of all outbreaks where the vehicle of infection was mentioned were due to the contamination of processed or made-up meat.* Canned meat apparently infected at the canning factory was responsible for 7 outbreaks.

The places where the contaminated food was bought or eaten was mentioned in 255 outbreaks (excluding family outbreaks). Canteens were mentioned in 104—school canteens in 64 of these—hospitals and institutions in 83, hotels and restaurants in 41, and the remainder were in butchers' and bakers' shops, cooked meat shops, hostels, etc.

In seven incidents salmonella were isolated from poultry and animals examined as possible sources of infection. Five outbreaks appear to have been due to food handlers who had symptoms immediately before the outbreaks occurred, and in six other incidents food handlers were found to be symptomless excreters of salmonellae, but they might have been infected at the same time as the cases.

Renewed efforts on the part of caterers and health educators are required to inculcate the importance of personal hygiene in food handlers, the need for protection of foods from vermin, birds and domestic animals, and the necessity for changes in the methods used for the preparation of food in large quantities in restaurants and canteens.

HAUGE, S. (1950). Matforgiftninger fremkalt av *Bacillus cereus.* **[Food poisoning caused by *Bacillus cereus.*]**—*Nord. hyg. Tidsk.* **31,** 189. [English summary.] **1172**

A new type of food-poisoning of a mild form, noted in four outbreaks involving 600 persons, is attributed to *B. cereus.* The organism has been found in cornflour and in vanilla sauces made with cornflour. The illness is considered to be caused by preformed toxin.
—F. R. HARRIS.

ANON. (1949). **[Thirty-two years of Soviet veterinary work.]**—*Veterinariya, Moscow.* **26,** No. 11. pp. 1-7. **1173**

It is claimed that rinderpest and bovine contagious pleuro-pneumonia were stamped out, and that the incidence of anthrax, glanders and mange had been considerably reduced.

In the U.S.S.R. there are 3,865 central veterinary stations with clinics and 5,458 without, 14,634 local veterinary stations, 512 polyclinics, 772 veterinary laboratories and 24 veterinary biochemical laboratories, the latter for the manufacture of medicines. Higher veterinary educational establishments have increased from four to 35, and there are also 110 zootechnical colleges for the training of "feldschers" [veterinary assistants with a relatively elementary course of training]. During 1949 5,548 feldschers completed their training and 2,808 veterinarians graduated.

On collective farms during 1948 cattle increased by 23%, pigs by 75%, sheep and goats by 16%.—F.A.A.

BEREGOVOI, L. (1949). **[Work of the Vvedenski and the Khrushchevo veterinary areas.]**—*Veterinariya, Moscow.* **26,** No. 12. pp. 45-48. **1174**

A general account of what are stated to be good developments from the Three-Year-Animal Husbandry Plan of 1949-51, an elaborate annual medical overhaul being a feature and routine testing for the common infections, which are detailed.—F.A.A.

See also absts. **911** (mycobacteria in sewage); **1236** (book, dairy law); **1237** (book, meat inspection).

LIVESTOCK HYGIENE

KALBFLEISCH, W. & WHITE, J. W. (1951). **Removal of air from dairy stables.**—*Sci. Agric.* **31,** 492-495. [Authors' summary copied *verbatim.*] **1175**

Data secured on removal of air in low temperature periods by outlets located at the ceiling and floor indicate that it is more feasible to exhaust air from the ceiling level. The loss of heat per grain of moisture exhausted is normally less if the air is removed by a ceiling outlet. Convenience of location and reduced costs of the ceiling outlet are also important considerations when placing a foul air outlet in a stable.

MILLER, G. D., FRYE, J. B., JR., BURCH, B. J., JR., HENDERSON, P. J. & RUSOFF, L. L. (1951). **The effect of sprinkling on the respiration rate, body temperature, grazing performance, and milk production of dairy cattle.**—*J. anim. Sci.* **10,** 961-968. [Authors' summary and conclusions modified.] **1176**

Two groups of 16 lactating cows (8 Holsteins and 8 Jerseys) each were used in a double-reversal experiment to study the effect of cooling by sprinkling on respiration rates, body temperatures and grazing performances. Although both breeds used the shower more as the temperature increased, the Holsteins remained under the shower an average of about 9% more than did the Jerseys. The average amount of time spent under the shower for both breeds was 2 to 3 times as great at a temperature range of 85° to 90°F. and 92° to 97°F., respectively, as at a temperature range of 80° to 85°F.

Respiration rates were slightly higher for Jerseys than for Holsteins, while the reverse was noted for body temperatures. The respiration rates of Holsteins and Jerseys having access to the shower were 18 and 13% lower, respectively, than for those with only shade.

Holsteins and Jerseys being sprinkled had body temperatures of 0·7°F. and 0·4°F. lower, respectively, than did those with only shade.

When the temperature range was 80° to 85°F. both breeds spent 63% of their time grazing and the use of the shower appeared to have no significant effect on grazing rate. At a temperature range of 92° to 97°F. the Holsteins and Jerseys grazed 69 and 68% less, respectively, than they did at a range of 80° to 85°F.

Although sprinkling was effective in cooling the cows as evidenced by decreasing respiration rates and body temperature and increasing grazing rates, there appeared to be no relationship between the amount of milk produced and treatment.

REPRODUCTION AND REPRODUCTIVE DISORDERS

AUTRUP, E. & RASBECH, N. O. (1951). Befrugtningsresultater ved kunstig inseminering med tyresperma i den postøstrale, haemorrhagiske periode. [**Artificial insemination of cattle during the post-oestrous period.**]—*Nord. Vet.-Med.* **3,** 40-46. [English and German summaries. Abst. from English summary.] **1177**

Recent views concerning the sexual cycle of the cow and the chances of conception on artificial insemination in the different phases of oestrus are discussed. The results from an artificial insemination unit of the use of this procedure at the beginning of post-oestral haemorrhage are discussed.

Artificial inseminations at the beginning of haemorrhage produced fertilization in 29·69%.

MOELLER, A. N. & VANDEMARK, N. L. (1951). **The relationship of the interval between inseminations to bovine fertility.**—*J. anim. Sci.* **10,** 987-992. [Authors' summary copied *verbatim.*] **1178**

Data showing the interval between two consecutive artificial inseminations (4885 cases) to cows were collected along with the fertility data for each interval as determined by 180 day non-returns to service. The distribution of these intervals showed definite peaks in numbers at 21 and 42 days. Based on the total recorded intervals up to and including those of 72 days length, 56% fell in the 18 to 25 day class, while 82% fell in this class when the totals for the first 35 days only were considered. The fertility levels based on non-returns to service after cows were inseminated 2–17, 18–25, 36–50, and 51–72 days after the previous insemination were 34, 49, 45, 50, and 54%, respectively. Only the fertility of those cows that returned for insemination at intervals of 2 to 17 days differed significantly from the mean fertility level. An increase of approximately 20% in the number of cows settled at any one estrus is indicated for a practice of breeding all cows regardless of the interval at which they return from a previous insemination as compared to a policy of breeding only those cows returning between 18 and 25 days after the previous service.

Christian, R. E. & Casida, L. E. (1951). **The effects of infertile insemination and individuality of bulls upon the subsequent fertility of cows returning for service.**—*J. Dairy Sci.* **34,** 971-977. [Authors' summary copied *verbatim.*] **1179**

Two studies were conducted to determine the effects of the bull used on first service on the fertility of his return cows at second service.

Certain bulls used on first service may affect the conception rate of other bulls used on his return cows at later services. The lowered fertility produced in the cows by the first bull is much more apparent for low-fertility bulls than for average-fertility bulls.

There is a definite association between the average length of the return-interval and the fertility of the return cows at second service, long return-intervals being associated with low fertility.

Christian, R. E., Ulberg, L. C. & Casida, L. E. (1951). **The response of low-fertility cows to insemination with semen from bulls of another breed.**—*J. Dairy Sci.* **34,** 988-991. [Authors' summary copied *verbatim.*] **1180**

This study included 66 cows each of which had been bred four or more times previously without apparent conception. There was a distinct breed difference in conception rates; 35 per cent of the Holsteins and 8 per cent of the Guernseys had normal embryos.

There is no evidence from this study that inseminating with semen from bulls of another breeed is beneficial in increasing conception rate in repeat-breeder cows. The unweighted percentage of cows with normal embryos was 28 in the control cows and 16 in the cross-mated cows.

Olds, D., Oliver, L. & Seath, D. M. (1951). **The fertility of bull semen extended with yolk-citrate containing varying proportions of egg yolk.**—*J. Dairy Sci.* **34,** 1081-1083. [Authors' summary copied *verbatim.*] **1181**

During the months of June and July, 1950, 182 semen samples from 26 bulls were split into two equal portions and extended with yolk-citrate prepared to contain egg yolk and sodium citrate solution in proportions of 1:1, 1:3 or 1:5. Semen in each of the extenders was used to breed 1,200 to 1,400 cows. There was no significant difference between the 1:1 and the 1:3 series. However, the semen extended in 1:5 yolk-citrate had a fertility of 7·8 percentage units lower than that extended in 1:3 yolk-citrate. This difference, when tested by Chi-square, was highly significant.

Brigatti, C. (1951). Studio delle correlazioni e dei rapporti nei tori tra razza, età, dimensioni e peso dei testicoli, peso degli epididimi. **[Correlation between breed and age of bulls and size and weight of the testes and weight of the epididymis.]**—*Zootec. Vet., Milan.* **6,** 24-38. [English summary.] **1182**

No correlation could be found between live weight and testicular weight nor between testicular weight and the weight of the epididymis. In all breeds examined, the testicular weight was found to increase with age as did the weight of the epididymis.—J. A. Nicholson.

Asher, T. & Kaemmerer, K. (1950). Reizversuche am Sperma. **[Stimulation of spermatozoa.]**—*Mh. prakt. Tierheilk.* **2,** 5-14. **1183**

Certain drugs notably *d*-desoxyephedrine hydrochloride and tutocain (a local anaesthetic chemically related to procaine) added to dog and bull semen diluted with glucose phosphate solution stimulate the motility of spermatozoa. It is suggested that the use of such drugs may assist in the routine examination of semen and prevent the assumption that spermatozoa which appear non-motile are dead. The hydrochloride of the *p-n*-butylaminobenzoic ester of *β*-dimethylaminoethanol was toxic to spermatozoa.—J. A. Nicholson.

Anderson, J. (1951). **A note on fructolysis and other characteristics in bull semen.**—*Brit. vet. J.* **107,** 435-437. [Author's summary copied *verbatim.*] **1184**

A direct relationship has been observed between fructolysis and the change in *p*H on incubation of bull semen, higher values for both being associated with a higher initial *p*H, a poorer buffer capacity, and a lower specific gravity of the seminal fluid. The direct estimation of fructolysis appears to give a better estimate of spermatozoal metabolic activity than the *p*H change.

Rollinson, D. H. L. (1951). **Fructose estimation and fructolysis of abnormal semen: results obtained in the field.**—*Vet. Rec.* **63,** 548-552. [Author's summary copied *verbatim.*] **1185**

The use of fructose estimation in field investigation is described. Results are given for 22 ejaculates from 11 bulls at 13 examinations, and these are compared with general semen characters. Variations in the rate of utilisation of fructose are described.

Faulds, J. S. (1951). **Phosphatase in dried seminal stains.**—*Edinb. med. J.* **58,** 94-98. **1186**

The seminal content of acid phosphatase

is much greater than that found in any other body fluid. The technique is described of estimating this enzyme in dried seminal stains in medico-legal work; details are given. A table is given to show how long phosphatase can be detected in dried stains. The seminal fluid of bulls, dogs, and g. pigs never contains more than 12 units per ml.—W. R. Bett.

Cleland, K. W. (1951). **The spermatogenic cycle of the guinea pig.**—*Aust. J. sci. Res.* Ser. B. **4**, 344-369. **1187**

A detailed investigation of the cyclic changes of cell types in the seminiferous tubules of isolated sexually, mature g. pigs. The cell types distinguished were spermatogonia, spermatocytes (six stages), unattached spermatids (three stages), and attached spermatids (four stages). Examination of serial sections provided evidence of a fairly close synchronization between the cells in any one layer of the tubule, but the distribution of phases of the cycle along the tubule was irregular; the classical "wave" structure was absent. The still attached spermatid is considered to be the pace-maker of the tubule, synchronization within and between layers being effected through the Sertoli cell continuum.—C. R. Austin.

Lee, Y. C. P., King, J. T. & Visscher, M. B. (1951). **Calorie intake and fertility in C_3H-male mice.**—*Amer. J. Physiol.* **167**, 375-378. [Authors' summary and conclusions copied *verbatim*.] **1188**

The fertility of the male C_3H mouse has been studied under several dietary situations. Copulatory capacity has been evaluated by evidence of a vaginal plug in the female after 12 hours of nocturnal exposure. Impregnating capacity has been evaluated by observation of the vaginal bleeding sign at the tenth day after insemination. No instance was observed in these studies in which a vaginal plug was not followed in approximately 10 days by the placentation sign. Therefore there was no instance of successful copulation without impregnation. It can be inferred that no mouse able to inseminate was deficient in spermatozoa.

When the C_3H mouse is underfed in calories its fertility is reduced and sometimes lost. The infertility is corrected by instituting a higher plane of calorie intake. The full-fed C_3H male mouse retains partial fertility until near death. Animals fed *ad libitum* on commercial fox chow maintained fair reproductive capacity through 2 years of age.

Melton, A. A., Berry, R. O. & Butler, O. D. (1951). **The interval between the time of ovulation and attachment of the bovine embryo.**—*J. anim. Sci.* **10**, 993-1005. [Authors' summary and conclusions slightly modified.] **1189**

Data for this experiment were taken from 18 heifers and cows, which were killed at intervals from 676 to 927 hours after ovulation.

The first response of the caruncles in the uterus for attachment is the loss of the surface epithelium. Attachment is not a sudden process but is gradual and continuous over a period of several weeks. The first points of attachment are immediately around the embryo and this is where the first placental plates can be seen on the chorionic membrane. The first placental plates appeared on the surface of the chorionic membrane immediately surrounding the embryo in the 720-hour embryo, and they first appeared on the chorionic membrane in the body of the uterus in the 850-hour embryo; but none were found in the non-gravid horn in the 927-hour embryo. In the early phases of attachment about two-thirds of the placental plates appeared on the ventral side of the chorionic membrane.

The allantoic sac completely filled the chorionic sac in the gravid horn of the 765-hour embryo, and in the 881-hour embryo the allantoic sac completely filled the chorionic sac in the non-gravid horn. At 754 hours after ovulation the caruncles immediately surrounding the embryo have changed from a smooth-rounded surface to an undulated surface. At 800 hours after ovulation there is a very fragile attachment between the maternal and chorionic tissue at three or four of the caruncles immediately surrounding the embryo. At 850 hours after ovulation the attachment has become firm enough for the embryo to be undoubtedly receiving a portion of its nourishment through the cotyledons.

The right ovary was more active in production of ova than the left ovary (68%).

Willett, E. L., Black, W. G., Casida, L. E., Stone, W. H. & Buckner, P. J. (1951). **Successful transplantation of a fertilized bovine ovum.**—*Science*. **113**, 247. **1190**

Superovulation was produced in a heifer with sheep pituitary gonadotrophin and it was artificially inseminated on two consecutive days. Five days later the animal was killed and the fertilized ova washed from the upper end of the uterine horns with homologous blood serum. A single eight-celled ovum was then inserted into the right uterine horn of another heifer near the tubo-uterine junction. A foetus developed in the right horn and a corpus luteum in the left ovary of this animal. The appear-

ance and blood type of the calf subsequently born gave strong support to the conclusion that the calf had developed from the transplanted ovum.—J. A. NICHOLSON.

BLACK, W. G., OTTO, G. & CASIDA, L. E. (1951). **Embryonic mortality in pregnancies induced in rabbits of different reproductive stages.** — *Endocrinology.* **49,** 237-243. [Authors' summary modified.] **1191**

Adult oestrous and pseudo-pregnant rabbits were ovulated by the administration of gonadotrophin and inseminated either vaginally or intra-uterine by laparotomy. At autopsy 15 days later the percentage of corpora lutea accounted for by normal embryos was 39% in vaginally-inseminated animals in oestrus, 49% in uterine-inseminated animals in oestrus, but 0% in uterine-inseminated pseudo-pregnant females.

Fertilized ova obtained from oestrous and pseudo-pregnant donor rabbits 25 hours after gonadotrophin treatment and uterine insemination were transplanted to the oviducts of other artificially ovulated oestrous and pseudo-pregnant host does. At P.M. examination 14 days later the numbers of normal embryos resulting from the transplanted ova were five of 18 for oestrous-to-oestrous transplant, 14 of 21 for pseudo-pregnant-to-oestrous, five of 20 for oestrous-to-pseudo-pregnant, and nine of 22 for pseudo-pregnant-to-pseudo-pregnant.

It was concluded that the failure of fertilized luteal-phase ova to survive *in situ* is not due to defects in the eggs nor to endocrine inadequacies of the uterine environment, but rather to factors associated with the development of a pyometra in the pseudo-pregnant uterus into which semen has been placed directly.

I. HOWELL, C. E. & ROLLINS, W. C. (1951). **Environmental sources of variation in the gestation length of the horse.**—*J. Anim. Sci.* **10,** 789-796. **1192**

II. ROLLINS, W. C. & HOWELL, C. E. (1951). **Genetic sources of variation in the gestation length of the horse.**—*Ibid.* 797-806. [Authors' summaries slightly modified.] **1193**

I. An analysis of the environmental sources of variation in the length of the gestation period of Arab mares has been made. Season of breeding is the most important source of variation in gestation length. It accounts for 44% of the total variance. Pregnancies resulting from breedings during the period December through May on the average were 10·4 days longer than those resulting from breedings during the period June through November.

Level of nutrition of the mare accounted for 5% of the total variance. Pregnancies of "well fed" mares averaged four days shorter than those for mares on a "maintenance ration". Seasonal variation in gestation length was found to be independent of the level of nutrition of the mare, thus implying that there is some important factor associated with season other than or in addition to level of nutrition of the mare that is operating to produce the observed seasonal variation. The authors briefly discuss the possibility that this factor may be the seasonal variation in the length of daylight.

II. Evidence is presented that in Arab horses the genotype of the foetus affects the length of gestation. This, of course, implies an influence of the stallion. The magnitude of this effect in records corrected for seasonal effect and level of nutrition of the mare was similar to reports for other breeds of horses and for dairy cattle and sheep. The heritability estimate obtained from these adjusted records was 36%.

Analysis of the authors' data and of other data in the literature suggests the possible importance with respect to gestation length of sex linked genes in both the genotype of the foetus and of the mare. A partitioning of the total phenotypic variance of gestation lengths into genetic and non-genetic factors yielded the following estimates of the relative importance of these sources of variation: Season of breeding accounted for 43·4% of the total variance, level of nutrition of the mare 5·2%, additive genotype of the foal 18·3%, dominance deviations from the additive scheme 7·1%, permanent maternal traits 12·2%, and residual unanalyzed causes 13·8%.

FORAKER, A. G. & BRAWNER, D. L. (1951). **Quantitative exfoliative cytology: differential counting of cervical smears stained for glycogen in cases of pregnant and nonpregnant women.**—*Arch. Path.* **51,** 201-204. **1194**

It was demonstrated that in cervical smears from 18 pregnant women $42{\cdot}0 \pm 20{\cdot}7\%$ of the cells stained positively with periodic acid, whereas in smears from 15 non-pregnant women $22{\cdot}6 \pm 15{\cdot}8\%$ of the cells stained positively. Saliva digestion of the smears prior to staining revealed that $79{\cdot}6 \pm 28{\cdot}7\%$ of the positively staining cells in the smears from pregnant women contained glycogen as against $38{\cdot}9 \pm 24{\cdot}5\%$ of the cells in smears from non-pregnant women. The possibility of using the findings for pregnancy diagnosis and other diagnostic purposes is being studied.—ALFRED T. COWIE.

ROBINSON, T. J. (1950.) **The control of fertility in sheep. Part I. Hormonal therapy in the induction of pregnancy in the anoestrous ewe.** —*J. agric. Sci.* **40,** 275-307. **1195**

Four experiments on the induction of pregnancy in anoestrous ewes during the summer are described. These are too complex for brief abstracting, but several of the more important conclusions may be noted. 800 I.U. pregnant mares' serum gonadotrophin (P.M.S.) will induce ovulation with heat if there is a waning corpus luteum present; if there is no spontaneous corpus luteum there may be ovulation without heat. If an active corpus luteum is present, neither ovulation nor heat may be induced. There may be a rhythm of pituitary activity during anoestrus so that the same dose of P.M.S. may have differing effects during the anoestrous period. The injection of testosterone propionate (35 mg.) 24 hours prior to giving P.M.S. will result in oestrus without ovulation. It is believed that pre-treatment with androgens (and presumably progesterone) is necessary for oestrus to occur following gonadotrophic stimulation. The low percentage of fertilized ova recoverable after service in gonadotrophin-treated ewes is most likely due to the uterine and tubal environments being unsuitable for transport of spermatozoa and fertilization. It is concluded that treatment with P.M.S. is only likely to be of practical value when the pituitary is sufficiently active to cause the development of follicles of sufficiently large size for the gonadotrophin to be able to develop them to the point of ovulation.—A. T. COWIE.

VARADIN, M. (1951). Djelovanje seruma ždrebnih kobila na rasplođivanje krmača. **[Pregnant mares' serum and reproduction in sows.]** —*Vet. Arhiv.* **21,** 345-367. [Abst. from summary.] **1196**

Subcutaneous injection of pregnant mare's serum into underfed sows increased fertility. The average litter size was also increased.

—C.M.S.

ANDERSON, J. (1951). **Notes on the semen of sterile and sub-fertile bulls.**—*Vet. Rec.* **63,** 733-736. [Author's summary copied *verbatim.*] **1197**

An account is given of various criteria, including *p*H, buffer capacity, specific gravity, fructose content and *p*H change in the semen of bulls with epididymitis, orchitis and morphologically abnormal spermatozoa.

BALLINGER, H. J. & ROWSON, L. E. A. (1951). **Infertility in a bull at an artificial insemination centre. Suspected case of *Vibrio foetus* infection.**—*Vet. Rec.* **63,** 622-623. [Authors' conclusion modified.] **1198**

From the evidence of this case and from evidence obtained from a second animal the authors consider that there is little room for doubt that a condition occurs in bulls about which little is yet known, which can be transmitted to cows by artificial insemination, and can also be transmitted from bull to bull by way of the artificial vagina or instruments used in its preparation.

The methods advocated in the past for sterilization of artificial vaginas, etc., are not adequate: they should be washed, stripped and sterilized by boiling. The latex linings will stand this treatment quite well for a considerable period. Thermometers, lubricating rods, etc., should be sterilized in the same way as inseminating pipettes, and unsterilized lubricating rods should not be dipped into the lubricating medium.

Particular care should be taken with every new bull introduced into the centre, especially if its initial conception rate appears rather low.

MAQSOOD, M. (1951). **Thyroxine therapy in male infertility.**—*Nature, Lond.* **168,** 466-467. **1199**

Infertile buck rabbits were treated with thyroxin; libido and spermatogenesis were increased. Similar results were obtained in other species.—JOHN SEAMER.

GREGORY, P. W., MEAD, S. W., REGAN, W. M. & ROLLINS, W. C. (1951). **Further studies concerning sex-limited genetic infertility in cattle.**—*J. Dairy Sci.* **34,** 1047-1055. [Authors' summary slightly modified.] **1200**

Data from additional mating tests support earlier evidence that the type of female sterility in the California Experiment Station Jersey Herd is conditioned by an autosomal recessive gene. Additional data also support an earlier conclusion that the gene conditioning the sterility is of relatively high frequency in certain lines in the Jersey breed. While more extensive studies are needed, a sample of the sterile females investigated manifest oestrous cycles that, in general, appear to be in the normal range. The cause of failure in the reproductive mechanism was not determined. Some of the eggs are capable of being fertilized and undergo cleavage. Thus, normal oogenesis, meiosis and fertilization are indicated, as is zygote abortion in the late cleavage or early blastocyst stage.

A small group of related Holstein bulls manifesting abundant libido but with greatly impaired fertility was studied. The chief characteristic of the semen was a low concentration

of spermatozoa, a high percentage of which were malformed. The conception rate per mating of five of the bulls varied from less than 1 to less than 10%; other tests indicate that the upper limit of fertility may be as high as 30%. A pedigree analysis suggests that the male infertility may be conditioned by a recessive autosomal gene. The data also suggest that different genes condition the male and female infertility.

SAUNDERS, L. Z. & FINCHER, M. G. (1951). **Hereditary multiple eye defects in grade Jersey calves.**—*Cornell Vet.* **41,** 351-366. [Authors' summary copied *verbatim.*] **1201**

A congenital blindness of grade Jersey calves was studied with respect to its clinical features, pathologic anatomy, and etiology. The blindness was caused by multiple eye defects consisting of irideremia, microphakia, ectopia lentis, and cataract. These defects were present at birth and were due to anomalous development during the later stages of fetal life.

The defects apparently are conditioned by an autosomal recessive mode of inheritance. The literature dealing with comparable eye anomalies in animals is reviewed.

CARROLL, F. D., GREGORY, P. W. & ROLLINS, W. C. (1951). **Thyrotropic-hormone deficiency in homozygous dwarf beef cattle.**—*J. anim. Sci.* **10,** 916-921. [Authors' summary copied *verbatim.*] **1202**

Physiological studies have been undertaken to determine why hereditarily conditioned beef cattle dwarfs fail to grow. Results were obtained which indicate the pituitary glands are deficient in thyrotropic hormone. This deficiency might largely account for the dwarfism. Additional data indicate that the growth hormone in the dwarf pituitary as well as gonad stimulating hormone are present.

GREGORY, P. W., ROLLINS, W. C., PATTENGALE, P. S. & CARROLL, F. D. (1951). **A phenotypic expression of homozygous dwarfism in beef cattle.**—*J. anim. Sci.* **10,** 922-933. [Authors' summary copied *verbatim.*] **1203**

A study of head contours of over 60 dwarfs and several hundred normal animals of the Hereford, Angus, and Shorthorn breeds reveals that the outstanding characteristic of the specific type of dwarfism studied is a brachycephalic head with a marked mid-forehead prominence present at birth and persisting throughout life. This type of contour is discontinuous with and does not intergrade into the type of contour of normal homozygotes. Accompanying this anomaly is a misshapen mandible in which there is marked malocclusion of the incisors with the dental pad. Incisors may extend forward to the dental pad from one-half to three and one-half centimeters. These characteristics are also symptoms of thyroid deficiency. Moreover, the stunted growth, heavy breathing, and extreme pot-belly of the dwarfs are manifestations of thyroid deficiency characteristic of hereditary or experimentally induced cretins. These morphological features are in agreement with physiological studies completed in our laboratory being reported in another paper which prove conclusively that dwarfs of this type possess a gross deficiency of the thyrotropic hormone.

YOUNG, G. B. (1951). **Observations on the frequency and sex ratio of Dexter "bulldog" calves.**—*Vet. Rec.* **63,** 635-636. [Author's summary and conclusion slightly modified.] **1204**

Breeding records from three individual herds and from the Dexter Cattle Herd Book have been examined with a view to determining the frequency of "bulldog" calves.

From 14 matings of long-legged × long-legged animals, only long-legged calves resulted. From 56 matings of short-legged × long-legged animals, 33 long-legged and 23 short-legged were born. From 61 matings of short-legged × short-legged animals, 21 long-legged, 28 short-legged and 12 "bulldogs" were produced.

In a herd where length of leg in the calves was not recorded, but where only Dexter-type breeding stock has been retained, 24·8% of the 671 births were "bulldogs".

Indirect evidence from (a) total birth notifications recorded in the Dexter Herd Book minus classes of calves which might be "monsters" and (b) a study of the sex ratio of those classed as probably "monsters", gives little reason to suppose that the sex ratio in abnormal calves is greatly disturbed.

The data support, in general, the current hypothesis that the short-legged character of the Dexter breed is due to a single dominant autosomal gene which, in the homozygous state, produces the "bulldog" calves. The data do not indicate any need to postulate modifying factors.

HEITMAN, H., JR., HUGHES, E. H. & KELLY, C. F. (1951). **Effects of elevated ambient temperature on pregnant sows.**—*J. anim. Sci.* **10,** 907-915. [Authors' summary copied *verbatim.*] **1205**

Results are reported on the reactions of 14 sows to ambient temperatures ranging as high as 99°F. Thirteen were 85 or more days pregnant and one was open [barren]. Increas-

ing the ambient temperature elevated markedly the respiratory rate and body (rectal) temperature of the pregnant swine. Feed and water consumptions were lowered. Of the 13 pregnant sows, 11 successfully farrowed following their return to normal conditions after being under experiment for periods averaging 8 days.

During these experimental periods, they were exposed to high temperatures for 24 to 72 hours. The 12th sow died from heat prostration carrying a litter which was apparently normal. The remaining sow aborted, but the majority of her litter gave evidence that it was undergoing resorption before the experiment was started. No evidence was accumulated that indicated that rise in body temperature under these conditions would cause abortion of a normal litter. The open sow lost weight and had a lowered feed and water consumption comparable to the pregnant sows. However, her respiratory and body temperature responses were much less pronounced.

HAMMOND, J., BROWNE, F. J. & WOLSTENHOLME, G. E. W. (1950). **Toxaemias of pregnancy, human and veterinary. A Ciba Foundation Symposium.** pp. xii+280. London: J. & A. Churchill, Ltd. 21s. **1206**

This publication is composed of papers read at a symposium at which both the medical and veterinary aspects of the subject were ventilated. The veterinary papers were:—"Toxaemias of pregnancy in domestic animals, with particular reference to sheep" by H. B. Parry; "Experimental ketosis in pregnant ewes" by A. T. Phillipson; "Neonatal ataxia of lambs" by R. Allcroft; "Observations on and treatment of clinical acetonaemia in cattle" by A. Messervy, and "Biochemical aspects of bovine parturient hypocalcaemia" by A. Robertson.

The proceedings were summed up from three separate angles, namely from the veterinary standpoint by J. Hammond, from the medical by G. W. Pickering and from the obstetrical by F. J. Browne.

It was apparent that the veterinary conditions were very different from the puerperal eclampsia of women which is characterized by hypertension, oedema and fits.

Browne in his summing up considered it strange that no reference had been made in the discussion to the possible role of the adrenal cortex in causation, since some of the cortical hormones are closely allied to the female sex hormones and since, when injected into animals, they can cause sodium retention, gross oedema, hypertension and albuminuria. Hammond, in his summary, looked upon the veterinary conditions as deficiency diseases in an acute form and postulated that the cause may be competition between the maternal and foetal organisms for nutrients in short supply. The various tissues of each compete for the nutrients available in the blood stream, the priority of each tissue being determined by its metabolic rate, the brain, for example, having a higher priority than bone and so on.

In addition to the purely veterinary papers, some of the contributions by medical workers are of considerable value to veterinarians, such, for example, as that dealing with the physiology of pregnancy by A. St.G. Huggett and that of G. W. Theobald in which he stressed the importance of dietetic deficiency in causation.

—M.C.

MASSON, G. M. C., CORCORAN, A. C. & PAGE, I. H. (1951). **Experimental production of a syndrome resembling toxemia of pregnancy.** —*J. Lab. clin. Med.* **38**, 213-226. [Authors' summary copied *verbatim*.] **1207**

Rats with established DCA-hypertensive disease injected with a renin-containing renal extract manifest during the next day or two a syndrome of anasarca, convulsions, and oliguria or anuria. It often terminates fatally. In contrast, concurrent treatment with renin and DCA [desoxycorticosterone acetate] from the onset (i.e. in the absence of established DCA hypertension) elicited only the additive effect of renin on the DCA diuresis and some weight loss. The syndrome can be obtained, although in less severe form, in rats brought into mild hypertension by prolonged administration of hypertonic or, in some instances, of isotonic NaCl.

Thromboplastin of bovine or human placental origin, trypsin, chymotrypsin, or pitressin did not elicit the syndrome in DCA-hypertensive rats.

The syndrome and the associated renal anatomic changes are reminiscent of eclampsia. The hepatic changes of eclampsia are lacking, but these have been attributed to, and reproduced by placental damage, which was not a factor in these studies. The fact that eclampsia is associted with and, in some degree, determined by the concurrence of sodium retention, hypertension, and renal disease accords with the suggestion that renin treatment of DCA-hypertensive rats gives new insight into the mechanism of eclamptogenic toxemia as also into the eclamptic state which occurs in severe diffuse glomerulonephritis.

See also abst. **1105** (abnormalities in chick embryos treated with sugar).

ZOOTECHNY

BROOKS, H. J. (1949). **Five years of a cross-bred dairy program in the tropics.**—*Proc. Amer. Brahman Centennial*, Sep. 27-Oct. 1, 1949. pp. 84-93. Clemson, S.C.: South Carolina Agric. Exp. Sta. **1208**

This is a progress account of an attempt to produce a breed of dairy cattle suitable for a tropical area with an annual rainfall of 145–150 inches. The method in use is the crossing together of (a) the local breed of cattle (b) zebu cattle and (c) Guernsey cattle, the final product to combine half Guernsey, one quarter zebu, and one quarter indigenous. Useful data are given on mortality rates, birth weights and adult weights, milk yields of the indigenous cattle and of zebu crosses with the indigenous cattle. No Guernsey blood has as yet been introduced.—M.C.

VAUGHAN, L. C. & MCDIARMID, A. (1951). **Observations on the dishorning of adult cattle.**—*Vet. Rec.* **63,** 717-720. [Authors' conclusion slightly modified.] **1209**

As a result of these experiments it was concluded that the removal of horns of cattle by ligation is too painful, too uncertain and frequently too slow, to be adopted as a method for general use. Of the various methods examined, that of cornual nerve block followed by surgical removal, either by saw or by embryotome wire, was the most rapid and effective and caused least disturbance to the animal.

DE LUCA, M. (1951). Ricerche biometriche sui bovini modicani. **[Biometrical observation on Sicilian cattle.]**—*Riv. Med. vet. Zootec.* **3,** 153-164. [English and French summaries. Abst. from English summary.] **1210**

An account of biometrical observations on cattle of the Modican Sicilian breed.

RUSOFF, L. L., DAVIS, A. V. & ALFORD, J. A. (1951). **Growth-promoting effect of aureomycin on young calves weaned from milk at an early age.**—*J. Nutrit.* **45,** 289-300. [Authors' summary copied *verbatim.*] **1211**

An aureomycin supplement fed at a 2% level in an all-vegetable protein calf starter ration, and crystalline aureomycin fed by capsule at a level of 75 to 150 mg. daily, stimulated the growth of Jersey and Holstein calves by 20% over that of control animals, through 16 weeks of age. The combined average daily gain for the supplemented calves of both breeds was 1·44 lb., as compared to 1·19 lb. for the controls. Aureomycin per se was responsible for the growth-stimulating effect of the supplement and not its content of vitamin B_{12} or other factors. No difference was observed in the feed efficiency as a result of feeding aureomycin. It appeared that the antibiotic stimulated appetite, which increased growth rate. The pure aureomycin prevented the onset of scours (diarrhea) since it was fed at a high level (75 mg. daily) early in life, while the supplement was not as effective until after 30 days of age (weaning), when higher levels of the antibiotic were being consumed. A bacteriological study of the effect of aureomycin on the rumen flora of calves failed to reveal any change in the usual microscopic appearance when protozoa and the morphological groups described by Pounden and Hibbs [*V.B.* **20,** 474 and 475] were used as the indicator organisms.

ALLEN, R. W. & KYLES, P. M. (1951). **Tests with a phenothiazine-salt mixture as a growth stimulant for sheep.**—*Proc. helminth. Soc., Wash.* **18,** 102-103. [Authors' conclusions copied *verbatim.*] **1212**

It is concluded on the basis of these experiments that a mixture containing 1 part phenothiazine and 9 parts common salt does not, in itself, possess properties capable of stimulating the growth of sheep. It seems probable, therefore, that the increased growth rates which have been observed by other workers following the administration of this mixture are due solely to the anthelmintic action of the drug.

HOERLEIN, A. B., HUBBARD, E. D. & GETTY, R. (1951). **The procurement and handling of swine blood samples on the farm.**—*J. Amer. vet. med. Ass.* **119,** 357-362. [Authors' summary copied *verbatim.*] **1213**

The routine bleeding of swine under ordinary farm conditions is not a difficult procedure. The discussion of technique includes restraint, equipment, special anatomic considerations and relative merits of ear bleeding and bleeding from the anterior vena cava.

Simple efficient means of insuring suitable samples for laboratory examination are described.

REYNIERS, J. A., TREXLER, P. C., ERVIN, R. F., WAGNER, M., LUCKEY, T. D. & GORDON, H. A. (1949). **Rearing germ-free chickens.**—*Lobund Rep.* **2,** 1-116. [Abst. from abst. in *Excerpta Med.* Sect. I. **4,** 206. (1950).] **1214**

A technique is described for the routine rearing of germ-free chickens, some of them for periods of more than 300 days.

Reyniers, J. A., Trexler, P. C., Ervin, R. F., Wagner, M., Luckey, T. D. & Gordon, H. A. (1949). **Some observations on germ-free Bantam chickens.**—*Lobund Rep.* **2,** 119-148. [Abst. from abst. in *Excerpta Med.* Sect. I. **4,** 206. (1950).] **1215**

Germ-free Bantam chickens could be reared through their entire life cycle on an autoclaved purified-type diet. These chickens were compared with controls. Their growth was "acceptable", perosis was not demonstrated; egg production was sporadic: hatchability was poor. The general morphology was equivalent to the non-germ-free controls. Only in the development of the lymphoid system and intestinal apparatus could certain differences be detected. A few biochemical analyses were reported. In a general survey no antibodies to five bacteria tested were demonstrated in the blood of four to eight week old chickens. In fowls 225 days old, reactivity to two of the five antigens tested could be demonstrated in low titre. This was attributed to the presence of dead bacterial cells in the food.

Reyniers, J. A., Trexler, P. C., Ervin, R. F., Wagner, M., Luckey, T. D. & Gordon, H. A. (1949). **The need for a unified terminology in germ-free life studies.**—*Lobund Rep.* **2,** 151-162. [Abst. in *Excerpta Med.* Sect. I. **4,** 206. (1950), copied *verbatim.*] **1216**

The terminology in germ-free life studies is discussed; the term "gonobiotics" for these studies is presented; germ-free organisms should be called gonotobiote.

Pincher, C. (1950). **Spotlight on animals.** pp. 188. London; New York; Melbourne; Sydney; Cape Town: Hutchinson & Co. (Publishers) Ltd. 12s. 6d. **1217**

This publication is a collection of unrelated items of information concerning animals from insects up to elephants. Although written in a popular style the information is derived from reputable sources and is very free from serious errors. As a source of information on the more out of the way aspects of animal life it has considerable value. Veterinary surgeons are often asked questions concerning animals the answers to which are not easily found in the standard textbooks. This book will provide an answer to some of these. Among the subjects touched upon are superovulation and transplantation of ova in cows; sleep and hibernation; the life span of animals; the grazing habits of cows; the vision of horses, and many others.—M.C.

TECHNIQUE AND APPARATUS

Walch, H. A., Jr., Jann, G. J. & Salle, A. J. (1951). **A simple sampling device for submerged cultures.** [Correspondence.] — *Science.* **114,** 368-369. **1218**

The culture is aerated through a submerged inlet with an outlet above the surface of the culture. By closing the outlet, fluid is forced up a withdrawal tube into a separating funnel from which it can be collected into a sterile container.—L. M. Markson.

Parker, R. C. [Associate Professor of Experimental Cytology, School of Hygiene, University of Toronto.] (1950). **Methods of tissue culture.** pp. xxiv + 294. London, Toronto, Melbourne, Sydney & Wellington: Cassell & Co. Ltd. 2nd Edit. revised. 57s. 6d. **1219**

The technique of tissue culture has found many applications in different fields of biological investigation. The first edition of this book played an important part in making known the techniques employed at the Rockefeller Institute for Medical Research in New York. This second edition has been planned to include the newer refinements introduced by many workers in different fields of investigation.

Apart from the many improvements in technical detail which are described throughout the book, a new chapter on watch-glass cultures has been added and details of recently developed biochemical methods are mentioned in the chapter on growth measurements.

The photographs and photomicrographs, some of which are new to this edition, are excellent.—L. P. Joyner.

Usdin, M. & Birkeland, J. M. (1951). **Liquid nitrogen as a tool for obtaining homogeneous bacterial suspensions.** — *Science.* **113,** 745. **1220**

A washed suspension of organisms was centrifuged and the supernatant liquid discarded. The organisms were then ground in a mortar with a small amount of liquid nitrogen until they thawed. The procedure was repeated and the organisms were then resuspended in saline. The organisms were very finely dispersed and remained in suspension for long periods.

Homogeneous suspensions of viable *Erysipelothrix rhusiopathiae* and *Mycobacteria* spp. were obtained in this way.—M.C .

TOENNIES, G., GALLANT, D. L., RAHN, O. & ISKE, B. (1951). **Inhibition of bacterial growth by adsorbed anionic detergents.**—*J. Lab. clin. Med.* **38**, 163-165. [Authors' summary amended.] **1221**

Glassware washed with soap or surface-active detergents is not fit for quantitative bacteriological experiments because these cleaning agents become adsorbed on the glass surface to which they adhere very persistently. Unless they are removed, either by oxidation and heating at 120°C. in distilled water or by readsorption on other surfaces, or by other means, no agreement between duplicates can be expected.

BRAMANN, J. & NORLIN, G. (1951). **A factor in yeast dialysate of significance in the formation of staphylococcus toxin.**—*Acta path. microbiol. scand.* **29**, 127-131. [In English. Authors' summary copied *verbatim*.] **1222**

A factor in yeast dialysate is described which stimulates the formation of toxin by staphylococci in casein hydrolysate culture medium. With addition of the yeast dialysate factor it is possible to obtain an equally strong toxin in infusion-free and agar-free media as that in Casman's medium.

TAKAHASHI, W. N. (1951). **A ground glass homogenizer for preparing virus samples from plant tissue.**—*Phytopathology*. **41**, 481-482. [Abst. in *Rev. appl. Mycol.* **30**, 506. (1951), copied *verbatim*.] **1223**

At the University of California, Berkeley, a tapered, self-fitting, ground glass homogenizer has proved useful in the preparation of virus samples, especially from small pieces of either fresh or frozen plant tissue. Two continuous grooves, extending from the shoulder round the base and up the opposite side, are cut in each pestle to supply liquid to the grinding surface and act as gross cutting edges. To prevent the compacting of unhomogenized tissue at the bottom of the apparatus, the base of the pestle should be rounded and fit neatly into the rounded bottom of the mortar cavity. The pestle may be operated manually or by a cone-drive motor.

TAYLOR, E. W. (1950). **The application of phase-contrast to the ultra-violet microscope.**—*Proc. roy. Soc.* Ser. B. **137**, 332-339. **1224**

Phase-contrast microscopy as introduced by Zernicke, and ultra-violet absorption microscopy as developed by Barnard and Welch, both have a number of advantages which are already well known. T. described an apparatus utilizing both principles, so that an object may be examined with the following optical systems in succession: normal visual, visual phase-contrast, normal ultra-violet absorption, and phase-contrast ultra-violet. The phase-contrast principle when applied to ultra-violet microscopy enhances the value of the latter in the resolution of fine structures.

A number of comparative photomicrographs are included. The ultra-violet wavelength used was 2750Å.—L. P. JOYNER.

FLYNN, F. V. & DE MAYO, P. (1951). **Micro-electrophoresis of protein on filter-paper.**—*Lancet*. **261**, 235-239. [Authors' summary copied *verbatim*.] **1225**

The techniques of protein electrophoresis on filter-paper are discussed. This method is of potential value in clinical studies of the proteins of serum and other body-fluids, owing to its simplicity, cheapness, and suitability for multiple analyses. Only minute quantities of serum—about 0·015–0·160 ml. are required. Qualitative and quantitative methods are described in detail, together with examples of results obtained. The reproducibility of the method is satisfactory. The results obtained by paper electrophoresis and by the classical Tiselius method do not always agree, but this does not lessen the eventual clinical value of the paper technique.

RINEHART, J. F. & ABUL-HAJ, S. K. (1951). **An improved method for histologic demonstration of acid mucopolysaccharides in tissues.**—*Arch. Path.* **52**, 189-194. [Authors' summary copied *verbatim*.] **1226**

A simple method of staining the mucoid ground substance and other elements of connective tissues is described and illustrated. The method appears to offer promise in the elucidation of the normal structure and relationships of the elements of connective tissue and in the analysis of alterations encountered in disease, particularly in arteriosclerosis and in renal and rheumatic diseases.

HAM, T. H. [Assistant Prof. of Medicine, Harvard Medical School.] [Edited by.] (1950). **A syllabus of laboratory examinations in clinical diagnosis. Critical evaluation of laboratory procedures in the study of the patient.** pp. xii + 496. Cambridge, Mass: Harvard University Press. 40s. **1227**

Thirty-three authors collaborated in the writing of this book and, before publication, the text was submitted to sixty-six critics. The result is an excellent work of reference for the clinician, laboratory worker, or teacher of clinical medicine.

Every effort has been made to present the

laboratory tests in an orderly manner. In each section, after a discussion of the problem, a list of procedures is given, followed by more detailed tests which may be necessary in the event of certain results being obtained from the screening tests.

After 27 pages of purely technical information, 217 pages are devoted to examinations of blood. The remaining 234 pages are concerned with urinary system, gastro-intestinal tract, infectious diseases, diseases of metabolism, and special tests related to extravascular fluids.

In each section, prolixity has been avoided very successfully, but all essential facts have been stressed. Thus, in most cases, the degree of accuracy to be expected from a given test, and the limitations of interpretation which can be applied to the result are very clearly stated. Techniques are described in great detail (the section on collection of blood samples is a model of its kind) and the bibliographies appended to each section are adequate.

The price has been kept low by the use of offset lithography. Nevertheless, it is easy to read and the book lies flat at whatever page it is opened.—G. B. S. HEATH.

CLEMEDSON, C.-J. & PETTERSSON, H. (1951). **A mechano-electronic transducer manometer.**—*J. Lab. clin. Med.* **38,** 631-637. [Authors' summary copied *verbatim.*] **1228**

A new manometer for direct pressure recording in the cardiovascular system and in other fluid- or gas-filled body cavities has been constructed. The pressure variations are directly transmitted and transformed into electric current variations by means of a mechano-electronic transducer. The construction of the manometer and its physical properties are described. Some pressure tracings obtained with the apparatus are given.

See also absts. **948** (isolation of *Brucella*); **954** (cultivation of *Leptospira*); **1017** (growth of virus of infectious sinusitis in chick embryos); **1090** (cadmium reaction); **1156** (preparation of gastric pouches in ruminants); **1190** (transplanation of fertilized bovine ovum); **1214** (rearing of germ-free chickens); **1230** (medical photography).

MISCELLANEOUS

ANON. (1951). **Index of agricultural research in progress during 1951.** pp. viii + 52. London: H.M. Stat. Off. 3s. 6d. **1229**

This is to be an annual publication to serve as an index of agricultural research in progress in Great Britain as shown by the title. The organisation and administration of agricultural research in Great Britain is to be described separately in a publication to be issued by the Agricultural Research Council.

This publication consists of a subject index under main titles, such as Animal Pathology, Biochemistry, etc. The items covered by these main headings are given in detail under each, with a very brief subtitle in some cases to amplify the name given for the item; for example, under Mineral Metabolism, the following are the items:—calcium metabolism of dairy cows, cobalt deficiency, iron metabolism (pigs), manganese in diet of poultry, mineral reserves and phosphorus metabolism (dairy cows). Opposite each of these items, the name of the Institute or Institutes at which the research is undertaken is given. There is also an Animal Index and a Crop Index. In the case of the Animal Index, the host, for example, Goats, is given, with the items concerned as subject heads, the Institute at which the work is undertaken again being shown.

There are two appendices (1) Holders of Scholarships and Fellowships of the A.R.C.; and (2) Agricultural Research Institutes which publish Annual Reports.

HUNT, J. [Medical Photographer, The Royal Cancer Hospital, London.] (1950). **An introduction to medical photography.** pp. 243. London: Staples Press, Ltd.; New York: Staples Press Inc. 30s. **1230**

This book, designed for the student medical photographer, fulfils its purpose excellently. Based as it is on the author's thirty years experience in large teaching hospitals, the chapter entitled "The Administration of the Photographic Department" describes a very comprehensive recording system. The index appears to be rather scrappy as only the main subjects are indexed. The printing is well done, the quality of the paper is good and the binding is adequate.—JAMES H. HALE.

REPORTS

U.S.A. NEW YORK. (1950). **Report of the New York State Veterinary College at Cornell University for the year 1948-1949.** [HAGAN, W. A.] pp. 236. Geneva: W. F. Humphrey, Inc. **1231**

New York State has now been shown to have areas which are cobalt-deficient for cattle and sheep. In COBALT DEFICIENCY, the ruminal bacteria of sheep are decreased in number, and types and cultural characters are changed;

cobalt salts *per os* prevent or cure the deficiency, but given parenterally they are ineffective. Vitamin B_{12} (which contains small amounts of cobalt) is ineffective as a cure or preventative when given *per os* or parenterally.

Studies of rats, dogs and hamsters have shown that, in late life, it is difficult to retain sufficient calcium from the diet but, by using radio-active Ca (Ca 45) it has been demonstrated that calcium lactate is readily assimilated during old age. As a result of this finding, 8% of dried milk solids have been incorporated in the bread ration of over 40,000 old patients. In old animals, diets which are rich in fat cause wastage of body calcium.

Synthesis of arginine, histidine, isoleucine, leucine, lysine, methionine, phenylalanine, threonine, tryptophane, and valine has been demonstrated in the rumen of sheep and goats.

As a supplement to the ration of dairy cows 1 g. per day of tocopherols had no effect upon the milk yield or the butter fat content of the milk. (This finding may indicate that the cows used in the test already received sufficient tocopherols in the diet.)

A great deal of work on the reproductive cycle in cattle has been undertaken. For artificial insemination, it has been found desirable to use all samples of semen in which there is progressive motility of 50% or more of the spermatozoa, as the number of normal spermatozoa per unit of diluted semen is the only factor which is highly correlated with fertility, and dilution can be adjusted according to the number of normal spermatozoa in the original ejaculate.

The minimum dose of α-tocopherol necessary to prevent or cure STIFF LAMB DISEASE was studied. Diets for fattening lambs and wintering cattle were tested, and a study was made also of the effects of rations, rate of freezing, and period of storage on the quality of frozen beef.—G. B. S. HEATH.

U.S.A. (1951). **Report of the Administrator of Agricultural Research, 1950.** [CARDON, P. V.] pp. 488. [Includes Report of Bureau of Animal Industry, 1950, pp. 127-231.] Washington, D.C.: U.S. Govt. Printing Off. $1.00. 1232

A large proportion of current research is devoted to long-term projects in animal husbandry. Investigation of animal diseases has included F. & M. DISEASE, BRUCELLOSIS, STERILITY, X-DISEASE (HYPERKERATOSIS IN CATTLE), ANAPLASMOSIS, JOHNE'S DISEASE, EQUINE ENCEPHALOMYELITIS and EQUINE INFECTIOUS ANAEMIA, SWINE FEVER, SWINE ERYSIPELAS, NEWCASTLE DISEASE and PULLORUM DISEASE.

A complement-fixation test developed for the detection of ANAPLASMOSIS is very promising. COCCIDIOSIS IN CALVES has been controlled by the use of movable pens, and sulphamethazine has proved more effective than sulphaquinoxaline in its treatment.

The U.S.A. has again maintained its freedom from F. & M. DISEASE, probably owing mainly to the Mexican Border Patrol established early in 1947. NEWCASTLE DISEASE was imported into California with an air shipment of pheasant, quail, ducks and partridges; the outbreak was controlled by slaughter of infected and exposed birds.

Phenothiazine treatment of calves on pasture resulted in significantly greater weight gains. Even one treatment of cattle with rotenone during each season has resulted in a marked lowering of INFESTATION BY OX WARBLES when carried out on a community wide basis, and other substances tested were all inferior to rotenone. An intermediate host is necessary for the transmission of the fringed tapeworm of sheep, *Thysanosoma actinioides*, but the intermediate host has not been identified. *Nematodirus spathiger* has been shown to be harmful to lambs.

Control of BRUCELLOSIS by vaccination plus test and slaughter has continued to give hopeful results. The average National incidence of infection with BOVINE TB. remained at 0·19%.—G. B. S. HEATH.

BOOK REVIEWS

LAPAGE, G. [Lecturer in Animal Pathology in the University of Cambridge.] (1951). **Parasitic animals.** pp. xxi+351. Cambridge: University Press. 21s. 1233

One always looks for good writing from the pen of Dr. Lapage and his new book is no exception to the rule. The text, which ranges over parasites at large, satisfies a very real need, as the author does not confine himself to a consideration of parasitism only as it is known in man or domestic animals. To be adequately comprehended the phenomenon of parasitism requires to be viewed as a whole and as it is found in ways of living uncomplicated by the issues of domestication and intensive methods of husbandry. The consequences of animal husbandry present special problems of their own which tend to obscure the trends of parasitism as they occur in natural and unfettered environments. The medical and veterinary implica-

tions of the subject are not ignored and much of the material is gathered from these fields. The breadth of treatment of the text will appeal equally to the general reader and to the biologist. The book, which is generously illustrated and indexed, can be heartily recommended to all those who revere knowledge and who wish to deepen their understanding of living and dependent things.—C. HORTON SMITH.

DRIVER, J. E. [Professor of Chemistry in the University of Hong Kong.] [Revised by.] (1951). **Bentley & Driver's text-book of pharmaceutical chemistry.** pp. ix+671. London, New York, Toronto: Geoffrey Cumberlege, Oxford University Press. 5th Edit. 32s. 6d. **1234**

For the fifth edition of this book, the text was revised, descriptions were expanded or modified and all monographs dealing with Pharmacopoeial substances were rewritten to conform with the British Pharmacopoeia, 1948.

The subject matter is intended for those reading for examinations in pharmaceutical chemistry in Great Britain and the British Empire and presupposes a knowledge of general chemistry up to the standard of Intermediate Examinations for Degrees in Pharmacy. It comprises three main parts:— (1) Analytical methods, (2) Inorganic, and (3) Organic, followed by useful Appendixes—Analytical Tables etc., and there is an Index. A colour chart of the commoner indicators is given and there are 50 diagrams and figures throughout the text.

This useful book will be welcomed by all who are interested in pharmaceutical and allied branches of chemistry.—E.M.J.

LEFANU, W. R. (1951). **A bio-bibliography of Edward Jenner. 1749-1823.** pp. xx+176. London: Harvey & Blythe, Ltd. 84s. **1235**

This beautifully printed and bound volume makes it clear that Jenner, apart altogether from his notable pioneering work on vaccination against smallpox, was a naturalist and physician of outstanding acumen who interested himself in a wide variety of subjects. Among these were hibernation in hedgehogs, freemartins, the habits of the cuckoo, migration of birds, distemper in dogs, hydatids in the brain of sheep, etc. He demonstrated that migration of birds was connected with changes in the activity of the sex glands. An observation recorded in a paper read after his death is of topical interest to-day when the role of migratory birds in introduction of foot and mouth disease into Great Britain is being studied. The present day attention is focussed particularly on starlings, but Jenner's paper records that pigeons fly daily from Holland to the coast of Norfolk.

In addition to a list of his published work, there are many abstracts from his vast correspondence. Splendidly illustrated, this book, which is obviously a labour of love, is a worthy memorial to an outstanding benefactor of the human race.—M.C.

BARTON, A. L. (1951). **Dairy law, sum and substance.** pp. viii+196. London: Charles Griffin & Co. Ltd. 7s. 6d. **1236**

Although our Milk & Dairies' legislation has been greatly simplified during the last few years by a consolidation of the many previous enactments, it is still complicated enough to make it difficult for a novice to put his finger on any special point he may wish to ascertain and learn all its implications. The author would appear to have broken new ground, as far as milk legislation is concerned, in producing this book which is arranged alphabetically and is generously cross-indexed. This cross reference will be found to be of the greatest help if the information required cannot at once be found.

As he says in his preface his aim has been to afford a handy reference for any one wishing to find easily the legal enactments concerned with any aspect of milk trading. This the author has on the whole succeeded in doing and he tells us he has brought the law to that existent on the 30th September, 1951.

Reference is also made to the Diseases of Animals Acts & Orders as they affect cattle, to the Attested Herds scheme, factory legislation as it affects the milk industry, fines connected with labour or milk contracts, adulteration and so on, and it is possible for anyone with the minimum of time and labour to find out any point at issue.

It is unfortunate, however, when the author has taken so much trouble to make his headings clear that we notice quite a number of inaccuracies which have been allowed to creep in. Amongst these, glanders and farcy and epizootic lymphangitis are mentioned as affecting cows and parasitic mange is stated to be a notifiable disease in cattle. On page 17 when discussing movement of cattle regulations "tuberculin-tested" cattle are mentioned when the author is referring to cattle from an attested herd. On page 47 it is said that certified milk is now obsolete in England and Wales, having been cancelled by the Milk & Dairies Regulations of 1949 whereas this category was done away in 1936. On page 145 mention is made of the Milk (Special Designations) (Scotland) Order of 1923 as being still operative although it was

superseded more than fifteen years ago. It is surprising that no mention is made of The Milk (Special Designations) (Scotland) Order of 1951 which consolidates all the previous enactments and amongst many other alterations makes provision for the cessation of all Standard milk in Scotland in 1954, just as accredited milk is cancelled in England. Notwithstanding this, on page 176 it is said that there is no intention of revoking this grade of milk in Scotland.

It is to be hoped that if a second edition of this little book be called for as would seem likely, the opportunity will be taken to correct such errors.

The book is published in pocket size which is most convenient, the printing is large and clear and we feel sure that it will prove a great boon to those concerned with many aspects of the milk industry.—D. S. RABAGLIATI.

SCHÖNBERG, F. & ZIETZSCHMANN, O. (1951). Die Ausführung der tierärztlichen Fleischuntersuchung. [**Veterinary meat inspection.**] pp. viii + 324. 4th Edit. Berlin: Paul Parey. DM. 37.-. **1237**

This book has been steadily improved through its four editions and the fourth one can justly be described as of excellent quality in its reading matter as well as in its physical form.

Special attention has been given to the anatomical aspect and the first three chapters deal with the lymphatic system of swine, cattle and horses. There are many first-class figures here, and indeed one would expect nothing better in a manual of anatomy.

The main part of the book deals with practical meat inspection in all the slaughter animals even including dogs and here are described the pathological conditions which figure in the German meat inspection law. Advice as to use or condemnation is, of course, given in relation to the law, and for this reason it is not possible to make any critical remarks about such advice.

The text is illustrated by numerous photographs, many in colour. This feature is a most valuable one which contributes much to the success of the book. Trichinosis is particularly well illustrated: in fact this book is an illustrated treatise on pathology and would be partly wasted if read only by meat inspectors.

The last quarter of the book gives instructions for bacteriological meat inspection, and the text of the Meat Inspection Law with its orders and regulations.

Glossy art paper enhances the good printing and the binding is also of good quality.

—J. EDWARDS.

WERNSTEDT, W. Professor Emer., Karolinska Institut. (1951). Medicinsk terminologi. [**Medical terminology.**] pp. 560. 3rd Edit. revised and enlarged. Stockholm: AB. Nordiska Bokhandeln. Kr. 39.50. **1238**

This useful medical dictionary in the Swedish language, first published in 1935, is now in its third edition. In the second edition (1943) the author added several thousand words and revised the anatomical nomenclature in accordance with the Jena nomenclature of 1935, the older usage being given in parentheses and the derivation following the Swedish form in square brackets, the Greek words being transliterated. This plan has been adhered to in this third edition which has been further enlarged, and the author has striven towards a more uniform and correct treatment of language and has aimed at eliminating discrepancies in regard to accentuation of the Latin words, to which it is clear that much care and thought has been given. In a new section (pp. 556-559) the meanings of the commoner Latin and Greek prefixes and suffixes are given; this should be very helpful to students. Specialized veterinary terminology is not, however, included.

Additional sources acknowledged are Blakiston's "New Gould Medical Dictionary", Abderhalden's "Medizinische Terminologie" and Bendz's "Latin för Medicinare" [*V.B.* **21**, 1903].

The book is well printed on good quality paper and is well bound. It should be welcomed in Sweden and will no doubt be used elsewhere by those who deal with medical literature and are versed in the Swedish language.

—F.E.W.

Printed by Charles Burrell & Son at the Castle Printing Works, Chertsey, Surrey

INDEX VETERINARIUS

The publication of *Index Veterinarius* commenced with the indexing of the literature of 1933. It is a complete index of current publications relating to veterinary research, public health, administration, education and other aspects of veterinary science.

The latest list of the publications searched for this purpose was circulated with the *Veterinary Bulletin*, **Vol. 22**, No. 1.

About 10,000 references are indexed each year, each reference being suitably cross-indexed alphabetically under subjects and under names of authors.

As each issue consists of a single complete alphabetical index of subjects and authors' names, a search through it involves a minimum of trouble, and all information required is readily found.

Vols. 1 to 5 (1933 to 1937) were issued quarterly, each volume covering the literature searched in the previous quarter, and Vols. 6 to 12 (1938 to 1944) half-yearly, each volume covering the literature searched in the previous six months. Vol. 13 (published 1946) was a single annual issue covering the literature searched in 1945 ; Vol. 14 is a single issue covering the literature searched in 1946. Vol. 15 will also be a single issue.

Stocks of Vols. 4, 5 and 13 are available : price £5 per volume. Other volumes incomplete : details on request.

Orders may be sent to: Central Sales Branch (Commonwealth Agricultural Bureaux), Farnham House, Farnham Royal, Nr. Slough, Bucks.

INDIAN COUNCIL OF AGRICULTURAL RESEARCH

INDIAN FARMING

A popular monthly magazine for the public.

Features of the magazine include *original articles* of practical interest to farmers: *What the scientists are doing ; What's doing in All-India ; You ask, we answer,* etc., of special interest to farmers, landowners, rural development workers, co-operative societies, Government officials, clubs, libraries and college students.

Annual subscription : Rs. 6. Single copy : As. /8/-.

INDIAN JOURNAL OF AGRICULTURAL SCIENCE

(QUARTERLY)

Annual subscription : Rs. 15. Single copy : Rs. 4.

INDIAN JOURNAL OF VETERINARY SCIENCE AND ANIMAL HUSBANDRY

(QUARTERLY)

Annual subscription : Rs. 6. Single copy : Rs. 2.

Publications recently released from press.

Miscellaneous Bulletin No. 24.—A Brief Survey of some of the Important Breeds of Cattle in India, Part II ; 2nd edition, with 30 plates ; price, Rs. 1/6/-.

Scientific Monograph No. 17.—Poisonous Plants of India by R. N. Chopra, Badwar and Ghosh.

Publications shortly to be released from press.

Bulletin No. 46.—A Brief Survey of some of the Important Breeds of Cattle in India. Part III ; 2nd edition.

To be had of

High Commissioner for India, India House, Aldwych, London

COMMONWEALTH AGRICULTURAL BUREAUX

JOURNALS PUBLISHED BY BUREAUX ON RELATED SUBJECTS

	Published by the :—
DAIRY SCIENCE ABSTRACTS ...	COMMONWEALTH BUREAU OF DAIRY SCIENCE, SHINFIELD.
ANIMAL BREEDING ABSTRACTS ...	COMMONWEALTH BUREAU OF ANIMAL BREEDING AND GENETICS, EDINBURGH.
HERBAGE ABSTRACTS ...	COMMONWEALTH BUREAU OF PASTURES AND FIELD CROPS, ABERYSTWYTH.
NUTRITION ABSTRACTS AND REVIEWS	COMMONWEALTH BUREAU OF ANIMAL NUTRITION, ABERDEEN.

Annual subscription to the first three is 35s. (with a special reduction of 20 per cent. for orders received direct from subscribers in Great Britain, the Dominions and Colonies) ; the annual subscription to Nutrition Abstracts and Reviews is 60s.

RECENT OCCASIONAL PUBLICATIONS ON AGRICULTURE AND FORESTRY

BUREAU JOINT PUBLICATIONS

No.		Price
9.	The use of aerial survey in forestry and agriculture. Commonwealth Bureaux of Forestry and Pastures and Field Crops, 1946 ...	7s. 6d.
10.	The use and misuse of shrubs and trees as fodder. Bureaux of Pastures and Field Crops, Forestry and Animal Nutrition, 1946	9s. 0d.
11.	Some British books on agriculture, forestry and related sciences, 1939-45. July 1946	3s. 0d.
12.	Phenothiazine, a review and bibliography	4s. 0d.

TECHNICAL COMMUNICATIONS, ETC.

Commonwealth Bureau of Animal Health, Weybridge.

Review Series No. 2. Modes of spread of *Streptococcus agalactiae* infection in dairy herds. A report on co-ordinated observations by the Agricultural Research Council of the United Kingdom. May, 1944 ... ... 3s. 0d.

Commonwealth Bureau of Animal Nutrition, Aberdeen.

15. Minerals in pasture. Deficiencies and excesses in relation to animal health. By F. C. Russell. May, 1944 ... ... 5s. 0d.
16. Diet in relation to reproduction and the viability of the young. Part 1. Rats and other laboratory animals. August, 1946 ... ... 6s. 0d.

Commonwealth Bureau of Animal Breeding and Genetics, Edinburgh.

The semen of animals and its use for artificial insemination. By James Anderson. Spring, 1945 ... ... 7s. 6d.

Commonwealth Bureau of Pastures and Field Crops, Aberystwyth.

36. The grasslands of Latin America. By Miss G. M. Roseveare. Late 1946 ... 20s. 0d.
38. Advances in grassland husbandry and fodder production. Second symposium. Late 1946 ... ... 6s. 0d.

Commonwealth Bureau of Plant Breeding and Genetics, Cambridge.

The new genetics in the Soviet Union. By P. S. Hudson and R. H. Richens. May, 1946 ... ... 6s. 0d.

Commonwealth Bureau of Soil Science, Harpenden.

43. Land classification for land-use planning. June, 1946 ... ... 4s. 0d.

Commonwealth Mycological Institute, Kew.

An annotated bibliography of medical mycology, 1945. 1946 ... ... 5s. 0d.

SUBSCRIPTIONS

All correspondence regarding subscriptions to journals and sales of occasional publications should be addressed to, and cheques made payable to :—Central Sales Branch (Commonwealth Agricultural Bureaux), Farnham House, Farnham Royal, Nr. Slough, Bucks.

Printed in Great Britain by C. Burrell & Son, Chertsey, Surrey